PHILIPS 32PW9520

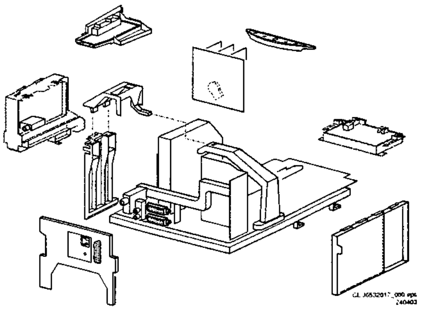
MODEL

SERVICE MANUAL

Colour Television **Chassis**

EM5.3E
AA

Service
Service
Service



Service Manual

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PHILIPS

1. Technical Specifications, Connection, and Chassis Overview

Index of this chapter:

1. Technical Specifications
2. Connection Overview
3. Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	: CRT-DV-RF
Screen sizes	: 28" (70 cm), 16:9
	: 32" (82 cm), 16:9
Tuning system	: PLL
Colour systems	: PAL B/G, D/K, I
	: SECAM B/G, D/K, L/L'
Video playback	: NTSC 3.58
	: NTSC 4.43
	: NTSC Play Back
Channel selections	: 100 presets
	: UHF
	: VHF
	: Hyper-band
	: S-band
Aerial input	: 75 ohm, Coax
	: IEC-type

1.1.2 Sound

Sound systems	: FM/FM B/G, Czech
	: NICAM B/G, D/K, I, L
Maximum power	: 4 x 15 W rms (int.)

1.1.3 Miscellaneous

Mains voltage	: 220 - 240 V_ac
Mains frequency	: 50 / 60 Hz
Ambient temperature	: +5 to +45 deg. C
Maximum humidity	: 90 % R.H.
	:
Power consumption	:
- Normal operation	: ≈ 130 W
- Standby	: < 1 W

1.2 Connection Overview

Note: The following connector color abbreviations are used (acc. to DIN/IEC 757):
Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Top Control and Front / Side Connections

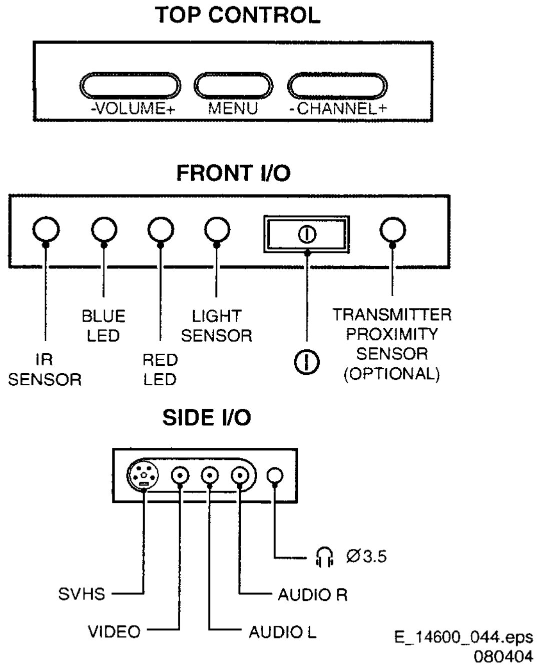
TOP CONTROL
-VOLUME+
MENU
-CHANNEL+
FRONT I/O
BLUE LED
LIGHT SENSOR
TRANSMITTER PROXIMITY SENSOR (OPTIONAL)
IR SENSOR
RED LED
SIDE I/O
Ø3.5
SVHS
AUDIO R
VIDEO
AUDIO L
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Figure 1-1 Top control and Front / Side connections

S-Video: In		
1 - Ground	Gnd	⏚
2 - Ground	Gnd	⏚
3 - Y	1 V_pp / 75 ohm	⊖
4 - C	0.3 V_pp / 75 ohm	⊖
Cinch: In		
Ye - Video-CVBS	1 V_pp / 75 ohm	⊖◎
Wh - Audio - L	0.5 V_rms / 10 kohm	⊖◎
Rd - Audio - R	0.5 V_rms / 10 kohm	⊖◎
Mini Jack: Headphone - Out		
- Headphone	32 - 600 ohm / 10 mW	◎🎧

1.2.2 Rear Connections

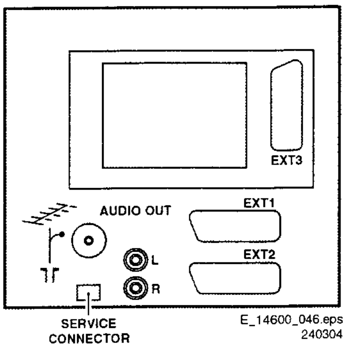

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Figure 1-2 Rear view

Aerial - In

- IEC-type	Coax, 75 ohm	⊤

Cinch: Audio - Out

Re - Audio - R	0.5 V_rms / 1 kohm	○→◎
Wh - Audio - L	0.5 V_rms / 1 kohm	○→◎

External 1: RGB/YUV and CVBS - In/Out

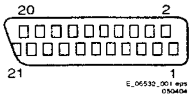

Figure 1-3 SCART connector

1	- Audio - R	0.5 V_rms / 1 kohm	○→
2	- Audio - R	0.5 V_rms / 10 kohm	→○
3	- Audio - L	0.5 V_rms / 1 kohm	○→
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	→○
7	- Blue/U - in	0.7 V_pp / 75 ohm	→○
8	- CVBS - status	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Green - gnd	Ground	⏚
10	- n.c.		
11	- Green/Y - in	0.7 V_pp / 75 ohm	→○
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- Red/V - in	0.7 V_pp / 75 ohm	→○
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	→○
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS - out	1 V_pp / 75 ohm	○→
20	- CVBS - in	1 V_pp / 75 ohm	→○
21	- Shielding	Ground	⏚

External 2: CVBS and SVHS - In (for video recorder)

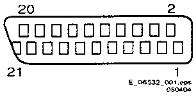

Figure 1-4 SCART connector

1	- Audio - R	0.5 V_rms / 1 kohm	○→
2	- Audio - R	0.5 V_rms / 10 kohm	→○
3	- Audio - L	0.5 V_rms / 1 kohm	○→
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	→○
7	- C - out	0.7 V_pp / 75 ohm	○→
8	- CVBS - status	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Green - gnd	Ground	⏚
10	- Easylink	(P50)	→○
11	- n.c.		
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- C - in	0.7 V_pp / 75 ohm	→○
16	- n.c.		
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS - out	1 V_pp / 75 ohm	○→
20	- Y / CVBS - in	1 V_pp / 75 ohm	→○
21	- Shielding	Ground	⏚

External 3: RGB and CVBS - In

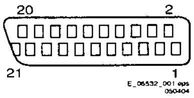

Figure 1-5 SCART connector

1	- n.c.		
2	- Audio - R	0.5 V_rms / 10 kohm	→○
3	- n.c.		
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	→○
7	- Blue - in	0.7 V_pp / 75 ohm	→○
8	- CVBS - status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	→○
9	- Green - gnd	Ground	⏚
10	- n.c.		
11	- Green - in	0.7 V_pp / 75 ohm	→○
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- Red - in	0.7 V_pp / 75 ohm	→○
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	→○
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- n.c.		
20	- CVBS - in	1 V_pp / 75 ohm	→○
21	- Shielding	Ground	⏚

1.3 Chassis Overview

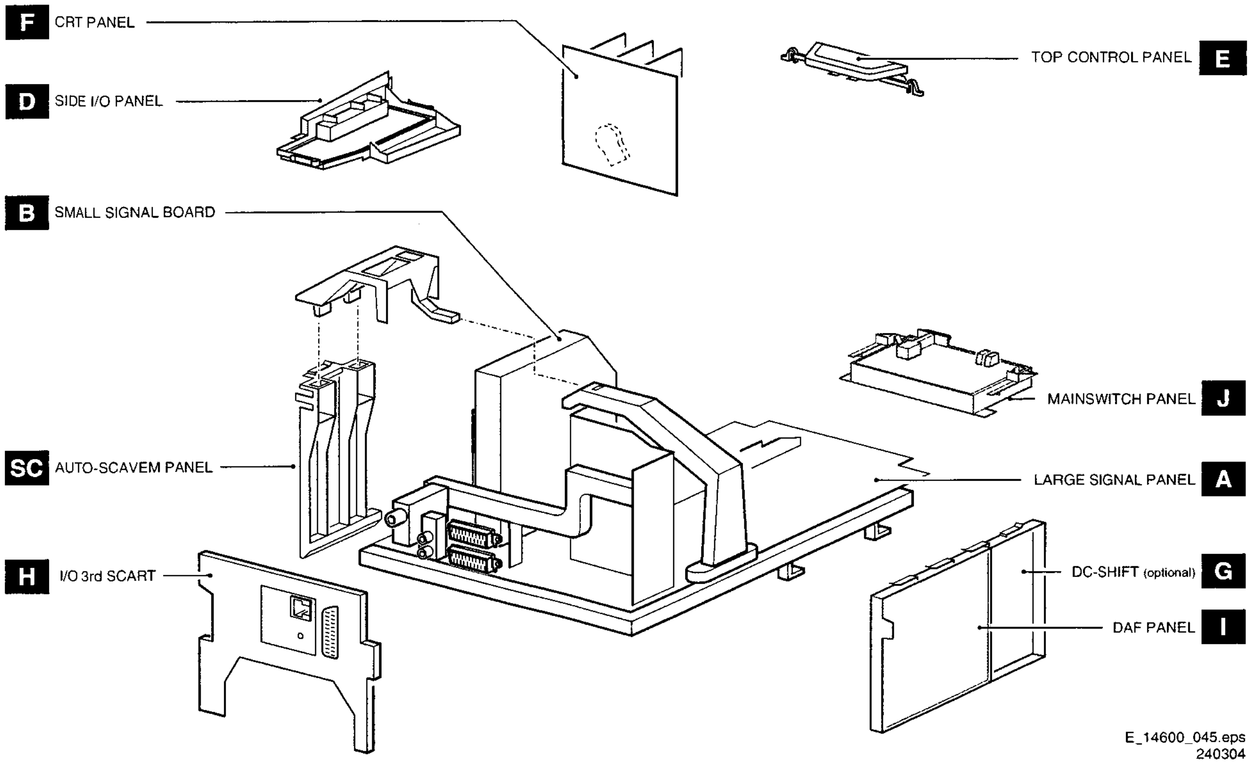
F CRT PANEL
D SIDE I/O PANEL
B SMALL SIGNAL BOARD
SC AUTO-SCAVEM PANEL
H I/O 3rd SCART
TOP CONTROL PANEL E
MAINSWITCH PANEL J
LARGE SIGNAL PANEL A
DC-SHIFT (optional) G
DAF PANEL I
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Figure 1-6 PWB locations

2. Safety and Maintenance Instructions, Warnings, and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Due to the chassis concept, a very large part of the circuitry (incl. deflection) is "hot". Therefore, connect the set to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that **after** a repair, you must return the set in its original condition. Pay, in particular, attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current is flowing. In particular this is valid for the:
  1. Pins of the line output transformer (LOT).
  2. Fly-back capacitor(s).
  3. S-correction capacitor(s).
  4. Line output transistor.
  5. Pins of the connector with wires to the deflection coil.
  6. Other components through which the deflection current flows.

Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.

- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the mains cord for external damage.
- Check the strain relief of the mains cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:
  1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
  2. Turn on the main power switch (keep the mains cord unplugged!).
  3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4.5 Mohm and 12 Mohm.
  4. Switch the TV "off" and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

2.2 Maintenance Instructions

We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
  1. Perform the "general repair instruction" noted above.
  2. Clean the power supply and deflection circuitry on the chassis.
  3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in Fig. 2-1, to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_dc). Discharge until the meter reading is 0 V (after approx. 30 s).

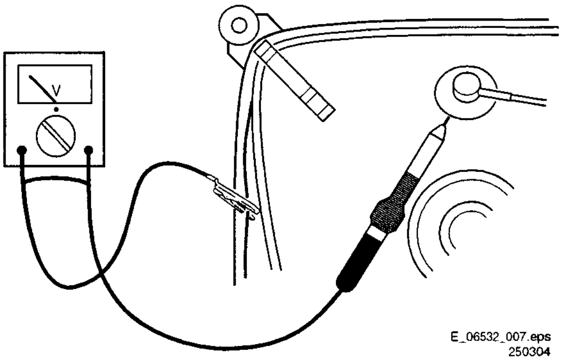

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Figure 2-1 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:
  - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and ground cable) 4822 310 10671.
  - Wristband tester 4822 344 13999.
- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. We do not recommend adjusting this unit during repair.
- Be careful during measurements in the high voltage section and on the picture tube.
- Never replace modules or other components while the unit is "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.4 Notes

2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⊽), depending on the tested area of circuitry.
- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5 "Service Modes, ...") with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊤) and without (⊤̸) aerial signal. Measure the voltages in the power supply section both in normal operation (Ⓘ) and in standby (⏻). These values are indicated by means of the appropriate symbols.

- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the "double-D symbol", are trademarks of Dolby Laboratories.

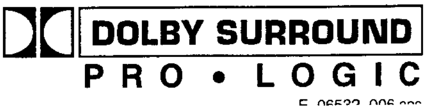


Figure 2-2 Dolby PL Symbol

2.4.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are expressed in micro-farads (μ= x 10^-6), nano-farads (n= x 10^-9), or pico-farads (p= x 10^-12).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.4.3 Rework on BGA (Ball Grid Array) ICs

General
Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device Removal
As is the case with any component that, it is essential when removing an (LF)BGA, the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB.
To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area Preparation
When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA.
Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.
After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA.
Note: Do not apply solder paste, as this has shown to result in problems during re-soldering.

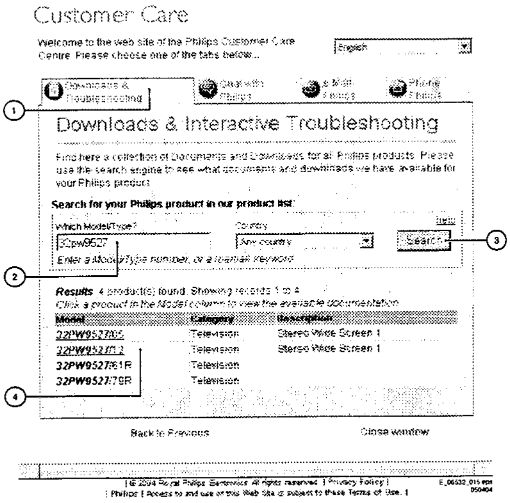
Device Replacement
The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers.
To reflow the solder, apply a temperature profile according to the *IC data sheet*. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

More Information
For more information on how to handle BGA devices, visit this URL:
http://www.atyourservice-magazine.com/workshop.shtml?v=main=en (only accessible for dealers with subscription)

3. Directions for Use

You can download this information from the following website:
http://www.philips.com/support

1. Click on "Downloads and Troubleshooting" [1].
2. Fill in the TV model/type number in the field "Which Model/Type?" [2] and click on "Search" [3].
   Note: The correct model/typenumber can be found on the rear cover of the set. If you do not have the complete model/typenumber, just fill in e.g. "32PW95" or "PW95" (do not use wildcards).
3. When results are returned, click on the desired model/typenumber under "Model" [4].
4. Now, click on the "Owner's manual" [5] in the desired language. To read/open the PDF files you can download and install the free Acrobat Reader http://www.adobe.com/products/acrobat/readstep2.html



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Results 4 product(s) found. Showing records 1 to 4

Click a product in the Model column to view the available documentation

Model	Category	Description
32PW9527/05	Television	Stereo Wide Screen 1
32PW9527/12	Television	Stereo Wide Screen 1
32PW9527/61R	Television	
32PW9527/79R	Television	

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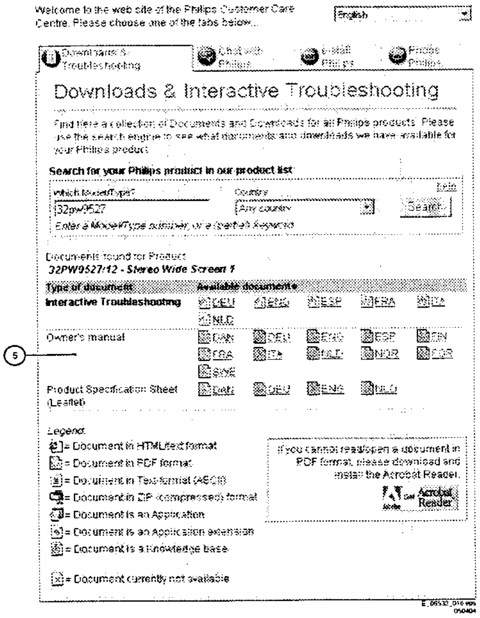
Figure 3-1 Screenshot DFU website (1)



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Enter a Model/Type number, or a (partial) keyword

Documents found for Product
32PW9527/12 - Stereo Wide Screen 1

Type of document	Available documents
Interactive Troubleshooting	DEU ENG ESP FRA ITA NLD
Owner's manual	DAN DEU ENG ESP FIN FRA ITA NLD NOR POR SVE
Product Specification Sheet (Leaflet)	DAN DEU ENG NLD

Legend:
= Document in HTML/text format
= Document in PDF format
= Document in Text-format (ASCII)
= Document in ZIP (compressed) format
= Document is an Application
= Document is an Application extension
= Document is a Knowledge base
= Document currently not available

If you cannot read/open a document in PDF format, please download and install the Acrobat Reader.

Figure 3-2 Screenshot DFU website (2)

4. Mechanical Instructions

Index of this chapter:
1. Service connector
2. Set Disassembly
3. Service Positions
4. Assies / Panels Removal
5. Set Reassembly

Note: figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Service Connector (for ComPair)

For service diagnostics with ComPair, it is not necessary to disassemble the set. You only have to connect the ComPair interface box via the appropriate cable, to the service connector on the rear of the set (see figure "Rear connections" in chapter "Technical specifications, ..."), and start the program (see also chapter "Service Modes .... ").

4.2 Set Disassembly

Follow the disassemble instructions in described order.

4.2.1 Rear Cover Removal

Warning: disconnect the mains power cord before you remove the rear cover.
1. Remove all screws. If you do not remove them, you cannot access the clips.
2. Tilt the set a little forward, so that you can release the two clickfit clamps that are located at the bottomplate of the set.
3. Four openings (1) can be found at the top (32" sets). The openings are very small (2).
   Note: 28" sets only have the two openings.
4. Underneath every opening there is a clip. Push this clip down with a very thin piece of metal (3), until you hear a click.
   Caution: do **not** use a screwdriver, this will damage the cabinet.
5. When all four clips are pushed down, the back cover can be removed a little (15 cm).
6. Before completely removing the back cover, the cable of the top control must be disconnected from the side I/O panel, otherwise damage can occur.
7. When reassembling the set, take care not to forget to connect the cable again.

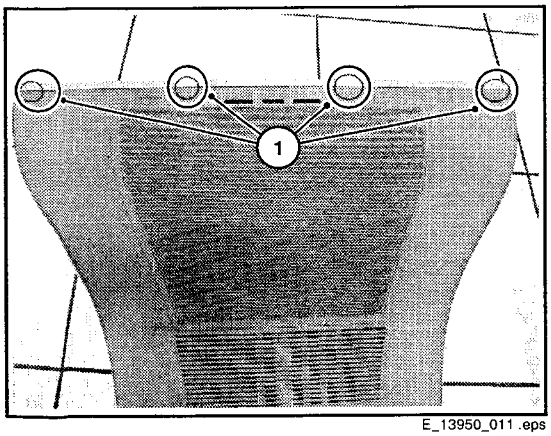

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Figure 4-1 Rear cover (for FL13B styling)

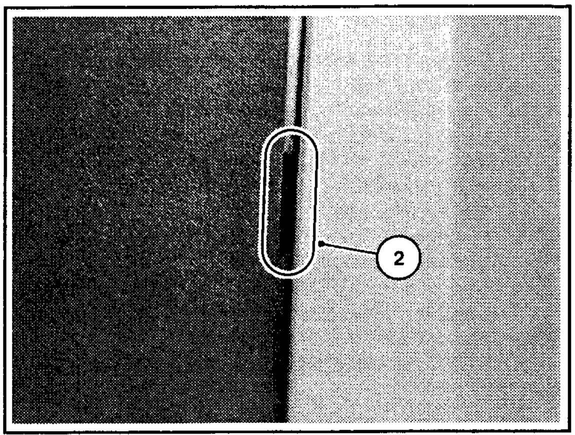

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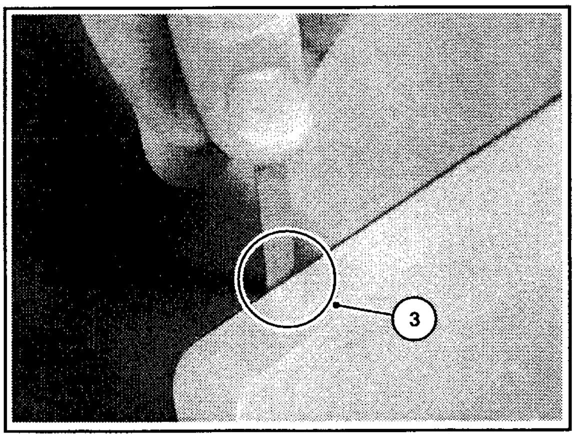
Figure 4-2 Opening



E_13950_013.eps

Figure 4-3 Pushing clips down

4.3 Service Positions

This chassis has several predefined service positions, for better accessibility. They are explained below in more detail.

4.3.1 Solder Side 'I/O 3rd SCART' panel

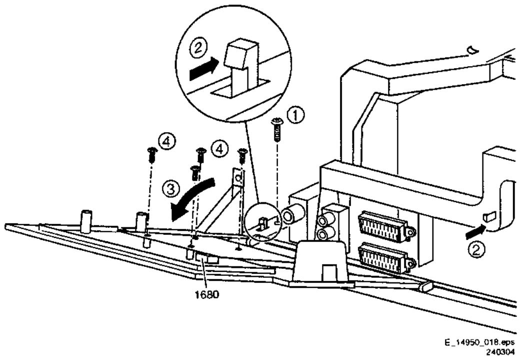


Figure 4-4 Service position 1

To remove or access the 'I/O 3rd SCART' panel, do the following:

1. Remove the fixation screw (1) (if present).
2. Release the two pegs (2).
3. At the same time, pull the complete module away from the LSP bracket (3). It hinges in the LSP bracket.
4. To remove the panel, disconnect the flat-cables, and remove the four panel screws (4).

4.3.2 Component Side LSP

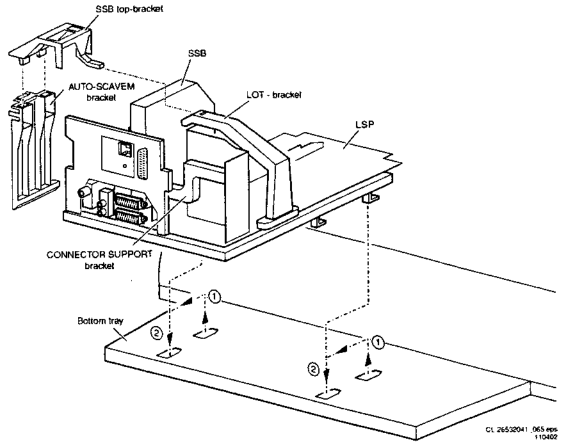


Figure 4-5 Service position 2

For better accessibility of the LSP, do the following (see figure above):

1. Remove the LSP-bracket from the bottom tray by pulling it backwards.
2. Hook the bracket in the first row of fixation holes of the bottom tray. In other words, reposition the bracket from (1) to (2).

4.3.3 Solder Side LSP

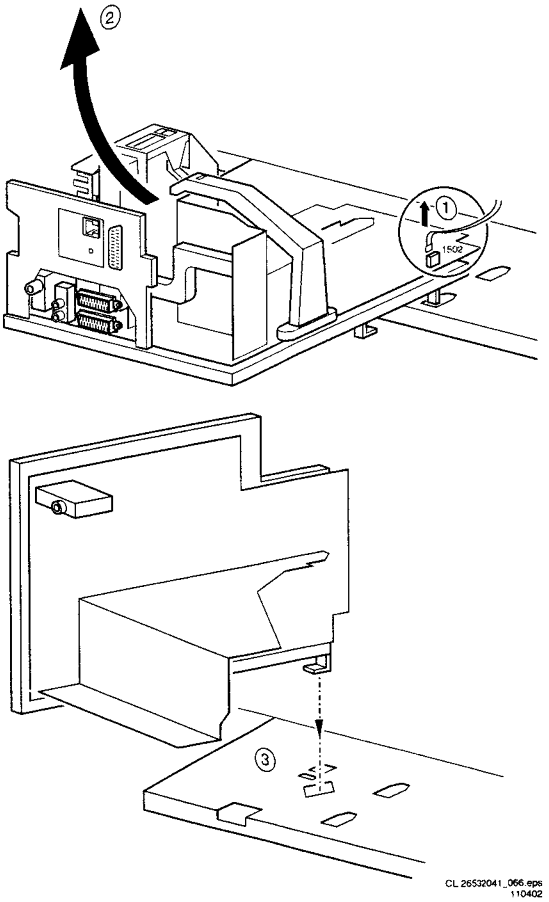


Figure 4-6 Service position 3

To get access to the bottom side (solder side) of the LSP, do the following (see figure above):

1. Remove the DAF-module (see paragraph 'DAF Assy/ Panel' below).
2. The 3 pin cable of side IO must be disconnected or complete side IO assy released from its hooks.
3. To disconnect the degaussing coil from the LSP, remove the cable from connector 1502 (1).
4. Release the wiring from their fixation clamps, in order to get room for repositioning the LSP.
5. Flip the LSP 90 degrees clockwise (2), and place it in the fixation hole at the left side of the bottom tray (3).

4.3.4 Small Signal Board (SSB)

Caution:
Always switch the set completely "OFF" (disconnected the mains cord) before you remove or replace the SSB.
As the 5V2 standby voltage is always present (while the set is switched "ON", in "standby" or in "Protection" mode) on the SIMM connector, it is very risky to remove the SSB in this situation, because the risk of short circuiting is very great.

In fact, there is no predefined service position for the SSB. Most test points are located on the A-side (side that is facing the tuner). If you have to replace ICs, you must take the complete SSB module out of the SIMM-connector.
Note: For good access to the A-side, it is necessary to remove the Auto-Scavem assy (at the left side of the SSB). See description in paragraph "Auto-SCAVEM Assy/Panel" below.

To get access to the SSB test points, do the following:

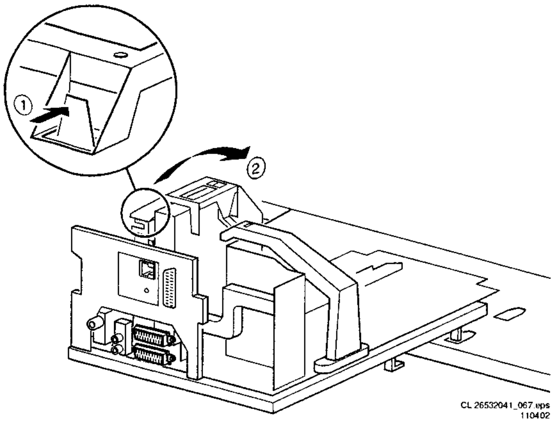


Figure 4-7 SSB removal (part 1)

1. Put the LSP in service position 2 (as described above).
2. Release the two clamps at the top of the SSB bracket (1) and pull the bracket upward (2) (it hinges in the bracket at the LOT side).
3. Now you can remove the complete SSB bracket.

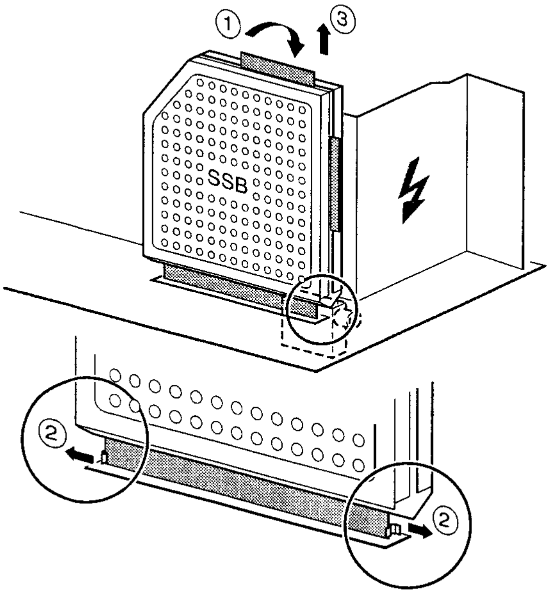


Figure 4-8 SSB removal (part 2)

1. Push the top of the SSB towards the LOT (1).
2. Due to the pressure, the two metal clamps at both sides of the SIMM-connector will release (2).
3. Take the complete SSB out (3).

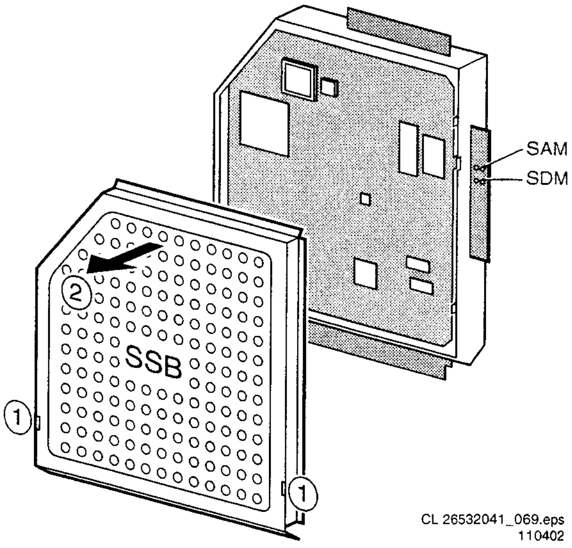


Figure 4-9 SSB removal (part 3)

1. Once you have taken out the SSB, remove the shieldings (2). Sometimes it is necessary to unsolder some solder-tags first (1).
2. Now re-place the SSB module in the SIMM-connector in reverse order.

Notes:
- For better access to the SSB, it is possible to order an 'extension tool' under number **9965 000 14526**.
- If necessary for the measurement, you can put the LSP in "Service position 2" (as described above).

4.4 Assies/Panels Removal

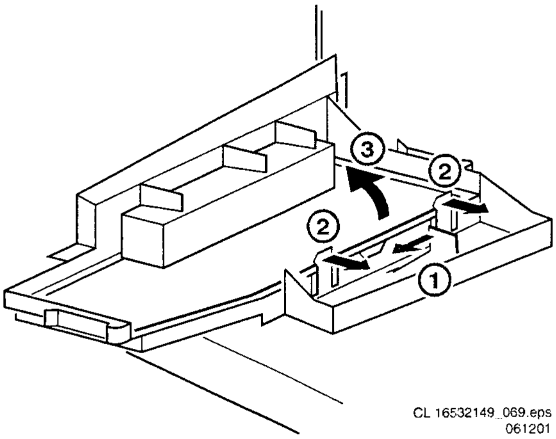
Sometimes, it can be necessary to swap a complete assy or Printed Wiring Board (PWB). How that can be done is explained below.

4.4.1 Top Control Assy/Panel

Notes:
- PV02 styling: assy is mounted in the front cabinet;
- FL13B styling: assy is mounted in the rear cover.

1. Remove the two fixation screws.
2. Push the assy a little bit upwards, and then pull it backwards to release it from the front hinge.
3. Lift the panel from its bracket, while releasing the four fixation clamps.

4.4.2 Side-I/O Assy/Panel



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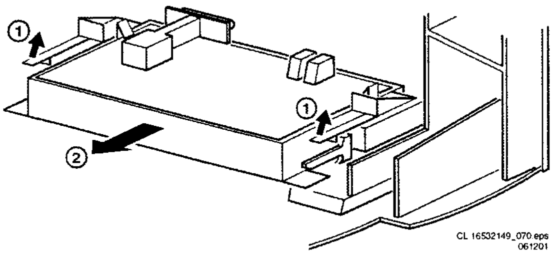
061201

Figure 4-10 Side I/O Assy/Panel

1. Release the snap-hook (1) with your finger.
2. At the same time, pull the assy backwards (2).
3. Release the two fixation clamps on the right side of the bracket (the panel hinges at the left side).
4. Remove the panel from the bracket (3).

4.4.3 Mains Switch Assy/Panel



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061201

Figure 4-11 Mains Switch Assy/Panel

1. Release the two fixation clamps (rather difficult to reach), by pushing them upwards (1). At the same time, pull the complete assy backwards (2).
   Note: be aware that the degaussing coil can hamper this.
2. Release the two fixation clamps on the two sides of the bracket (the panel hinges at the connector side).
3. Remove the panel from the bracket.
4. When the light guide (sitting in the cabinet, in front of the LEDs) is defective, you can replace it by pushing it forwards at the left side (it hinges at the right side, seen from the rear).

4.4.4 DAF Assy/Panel

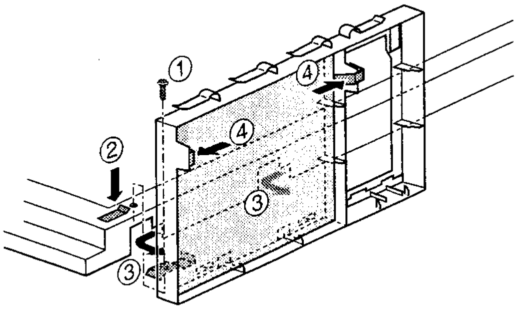

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Figure 4-12 DAF-module

1. Remove the fixation screw (1) (if present).
2. Push down the fixation clamp (2), and pull the complete bracket at the same time away from the CRT (3). The module is now free from the LSP-bracket.
3. Release the fixation clamps (4), in order to remove the panel from its bracket.

4.4.5 Auto-SCAVEM Assy/Panel

This panel is placed on the left side of the SSB (See figure 'Service Position 2'). Because most of its components are placed on the bottom side, you must lift the panel from its bracket before you can measure it.

1. Therefore, release the two fixation clamps at the top.
2. Lift the panel from the bracket (it hinges at the bottom).

To remove the bracket:

1. First, remove the panel from the bracket, as described above.
2. Remove the SSB bracket (see paragraph "Small Signal Board (SSB)" above).
3. Remove the two fixation screws at the bottom.
4. Lift the Auto-Scavem bracket slightly up, and at the same time bend the top a little away from the tuner.
5. Now, push the bracket into the direction of the CRT, and lift it out of the LSP-bracket.

4.4.6 Large Signal Panel (LSP)

1. Remove the "I/O 3rd SCART" assy (see paragraph "I/O 3rd SCART" above).
2. Remove the DAF assy (see paragraph "DAF Assy/Panel" above).
3. Remove the SSB bracket and the SSB (see paragraph "Small Signal Board (SSB)'"above).
4. Remove the Auto-SCAVEM bracket (see paragraph "Auto-SCAVEM assy/panel" above).
5. Remove the two fixation screws at the bottom by the LOT bracket. Lift the LOT bracket from the right side slightly up, and at the same time release it from the fastening at the top, and remove the LOT bracket.
6. Disconnect the necessary cables.
7. Remove the two fixation screws. One screw is located nearby the SIMM-connector and the second screw is located nearby the degaussing coil.
8. Release the fixation clamps on the left side and on the topside of the LSP-bracket (the panel hinges at the right side).
9. Remove the panel from the bracket.

4.5 Set Re-assembly

To re-assemble the whole set, do all processes in reverse order.

Note: be sure that, before the rear cover is mounted:

- The mains cord is mounted correctly in its guiding brackets.
- All wires/cables are returned in their original positions. This is very important due to the large "hot" area of the set

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

1. Test points
2. Service Modes
3. Problems and solving tips (related to CSM)
4. ComPair
5. Error Codes
6. The blinking LED procedure
7. Protections
8. Repair tips

5.1 Test Points

The chassis is equipped with test points printed on the circuit board assemblies. They refer to the diagram letters.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Philips Customer Care Centre (P3C) and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements below) and the TV chassis. It offers the ability of structured troubleshooting, test pattern generation, error code reading, software version readout, and software upgrading.
Minimum requirements: a Pentium processor, Windows 95/ 98, and a CD-ROM drive (see also paragraph "ComPair").

Note: In this chassis, two LED configurations are possible: with bicoloured LED (red/green) or with separate blue and red LEDs. The bicoloured version is the one we know from EM5E. The version with blue LED works slightly different. The blue LED is controlled by software (via ON_OFF_LED). The red LED will light in anti-phase to the blue one, but with a time delay. This means that if the blue LED is blinking fast, the red LED will stay off. But after the blue LED is "OFF" long enough, the red LED will go "ON".
So take care: In certain service modes (e.g. blinking LED, stepwise start-up, etc.) you must observe the blue LED and ignore the red LED.

5.2.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections.
- To start the blinking LED procedure.

Specifications

- Tuning frequency: 475.25 MHz for PAL/SECAM.
- Colour system: SECAM L for France or PAL B/G for the rest of Europe.
- All picture settings at 50 % (brightness, colour, contrast).
- All sound settings at 50 %, except volume at 25 %.
- All service-unfriendly modes (if present) are disabled, like:
  - (Sleep) timer.
  - Child/parental lock.
  - Blue mute.
  - Automatic volume limiter (AVL).
  - Auto switch-off (when no video signal was received for 10 minutes).
  - Skip/blank of non-favourite pre-sets.
  - Smart modes.
  - Auto store of personal presets.
  - Auto user menu time-out.

How to enter SDM

- Use one of the following methods:
- Use the standard RC-transmitter and key in the code "062596", directly followed by the "MENU" button.
  Note: It is possible that, together with the SDM, the main menu will appear. To switch it off, push the "MENU" button again.
- When you shorten for a moment the two solder pads on the 'external part' of the SSB print, with the indication "SDM". Activation can be performed in all modes, except when the set has a problem with the main-processor.
  Caution: If the SDM is entered via the pins, all the software-controlled protections are de-activated.
- Use the DST-emulation feature of ComPair.
- Use the "DEFAULT" button on the Dealer Service Tool (RC7150).

After entering this mode, "SDM" will appear in the upper right corner of the screen.

How to navigate

When you press the "MENU" button on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

How to exit SDM

Use one of the following methods:

- Switch the set to STANDBY via the RC-transmitter.
- Press the "EXIT" button on the DST.
- Via a standard customer RC-transmitter: key in "00"-sequence.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.
- To display (or clear) the error code buffer.

Specifications

- Operation hours counter.
- Software version.
- Option settings.
- Error buffer reading and erasing.
- Software alignments.

How to enter SAM

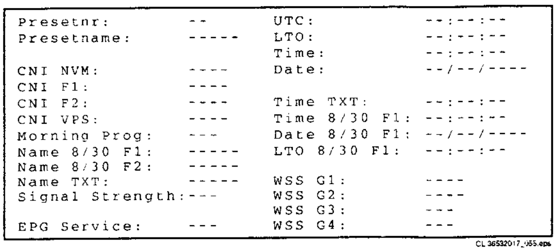
Use one of the following methods:

- Via a standard RC transmitter: key in the code "062596" directly followed by the "OSD [i+]" button. After activating SAM with this method a service warning will appear on the screen, you can continue by pressing any digit key on the RC.
- Short for a moment the two solder pads on the 'external part' of the SSB print, with the indication SAM. Depending on the software version it is possible that the service warning will appear, you can continue by pressing any digit key on the RC.
- Use the DST-emulation feature of ComPair.
- Press the ALIGN button on the DST while the set is in the normal operation

After entering this mode, "SAM" will appear in the upper right corner of the screen.

Contents of SAM:

- **OPERATION HOURS.** Displays the accumulated total of operation hours (not the standby hours).
- **HARDWARE INFO**
  - **ROM VERSION.** Displays the date of the software and the software version of the ROM (example: EM53EU1-1.0_01234 = AAABBC-X.Y_NNNNN).
    - **AAA**= the chassis name.
    - **BB**= the region: EU= Europe, AP= Asia Pacific PAL/Multi, AN= Asia Pacific NTSC, US= USA, LT= LATAM.
    - **C**= the language cluster number.
    - **X.Y**= the software version, where X is the main version number (different numbers are not compatible with one another) and Y is the sub version number (a higher number is always compatible with a lower number).
    - **NNNNN**= last five digits of 12nc code software.
  - **FBX VERSION.** The 12NC-number of the build in Feature Box software.
- **ERRORS** (followed by maximal 10 errors). The most recent error is displayed at the upper left (for an error explanation see paragraph "Error Codes").
- **DEFECTIVE MODULE.** Here the module that generates the error is displayed. If there are multiple errors in the buffer, which are not all generated by a single module, there is probably another defect. It will then display the message "UNKNOWN" here.
- **RESET ERROR BUFFER.** When you press the "OK" button, the error buffer is reset.
- **ALIGNMENTS.** This will activate the "ALIGNMENTS" sub-menu.
- **DEALER OPTIONS.** Extra features for the dealers.
- **SERVICE OPTIONS.** Extra features for Service.
- **INITIALISE NVM.** When an NVM was corrupted (or replaced) in the former EM3 chassis, the microprocessor replaces the content with default data (to assure that the set can operate). However, all pre-sets and alignment values are gone now, and option numbers are not correct. Therefore, this was a very drastic way. In this chassis, the procedure is implemented in another way: The moment the processor recognises a corrupted NVM, the "INITIALISE NVM" line will be highlighted. Now, you can do two things (dependent of the service instructions at that moment):
  - Save the content of the NVM via ComPair for development analysis, before initialising. This will give the Philips Service department an extra possibility for diagnosis (e.g. when Development asks for this).
  - Initialise the NVM (same as in the past, however now it happens conscious).
- **STORE.** All options and alignments are stored when pressing the "OK"-button
- **FUNCTIONAL TEST.** All devices are tested via the "OK" button. Eventual errors are displayed in the error buffer. The error buffer is not erased, the content returns when this test is terminated.
- **DAILY MENUS.** With the "OK" button, you can go to the normal user menu. SAM is still active in the background. With the "MENU" button, you return from the user menu to SAM menu. This feature can be helpful to quickly change some settings in the user menu.
- **SW MAINTENANCE**
  - **UPGRADE.** Not applicable for this chassis
  - **EVENTS.** Not useful for service purposes. In case of specific software problems, the development department can ask for this info.
  - **BDM INFO.** Broadcast Debug Menu info. The purpose of this menu is to debug the broadcast, NOT the TV. The menu gives an overview of what is received on the current preset. Following items are displayed:



```
Presetnr:          --       UTC:            --:--:--
Presetname:        -----    LTO:            --:--:--
                            Time:           --:--:--
CNI NVM:           ----     Date:           --/--/----
CNI F1:            ----
CNI F2:            ----     Time TXT:       --:--:--
CNI VPS:           ----     Time 8/30 F1:   --:--:--
Morning Prog:      ---      Date 8/30 F1:   --/--/----
Name 8/30 F1:      -----    LTO 8/30 F1:    --:--:--
Name 8/30 F2:      -----
Name TXT:          -----    WSS G1:         ----
Signal Strength:---         WSS G2:         ----
                            WSS G3:         ---
EPG Service:       ---      WSS G4:         ---
```

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Figure 5-1 Broadcast debug menu overview.

Table 5-1 Broadcast debug menu explanation

Item	Source	Description
Presetnr	Set	Presetnumber of the current selected preset.
Presetname	Set	Presetname of the current selected preset.
CNI NVM	Broadcaster	CNI number stored in NVM for the current preset.
CNI F1	Broadcaster	CNI number from transmitted Packet 8/30 Format 1.
CNI F2	Broadcaster	CNI number from transmitted Packet 8/30 Format 2.
CNI VPS	Broadcaster	CNI number from transmitted VPS line.
Morning Prog	Broadcaster	"ARD" or "ZDF" according to dedicated bit in 8/30 Format 1.
Name 8/30 F1	Broadcaster	Name extracted from status message of 8/30 Format 1.
Name 8/30 F2	Broadcaster	Name extracted from status message of 8/30 Format 2.
Name TXT	Broadcaster	Name extracted from TXT header.
Signal Strength	FBX	Noise figure measured for selected preset.
EPG Service	Set	EPG Service stored in NVM for current preset displayed as "TXT", "MCP", "SCP", "OCP".
UTC	Set	UTC (Universal Time Code formerly known as Greenwich Mean Time) used in the set.
LTO	Set	LTO (Local Time Offset) used in the set. Used by EPG for all Nextview displays. (= Time TXT header - Time 8/30 F1)
Time	Set	Current time running in the set. Was extracted at startup, then maintained by software.
Date	Set	Current date running in the set. Was extracted at startup, then maintained by software.
Time TXT	Broadcaster	TXT header time from the selected preset.
Time 8/30 F1	Broadcaster	UTC time from 8/30 Format 1.
Date 8/30 F1	Broadcaster	Date from 8/30 Format 1.
LTO 8/30 F1	Broadcaster	LTO from 8/30 Format 1.
WSS G1	Broadcaster	WSS Group 1 (Aspect Ratio) bits 0 1 2 3
WSS G2	Broadcaster	WSS Group 2 (Enhanced Services) bits 4 5 6 7
WSS G3	Broadcaster	WSS Group 3 (Subtitles) bits 8 9 10
WSS G4	Broadcaster	WSS Group 4 (Reserved) bits 11 12 13

How to navigate

- In SAM, you can select the menu items with the "CURSOR UP/DOWN" key on the RC-transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.
- With the "CURSOR LEFT/RIGHT" keys, it is possible to:
  - (De) activate the selected menu item.
  - Change the value of the selected menu item.
  - Activate the selected submenu.

How to exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter, or
- Switch the set to STANDBY via the RC-transmitter, or
- Press the "EXIT" button on the DST.

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer. The service technician can than ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.
The CSM is a read only mode; therefore, modifications in this mode are not possible.

How to enter CSM

Use one of the following methods:

- Press the "MUTE" button on the RC-transmitter simultaneously with the "MENU" button on the TV (top control) for at least 4 seconds.
- Key in the code "123654" via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!

How to navigate

By means of the "CURSOR-DOWN/UP" knob on the RC-transmitter, you can navigate through the five menus.

Contents of CSM

Customer Service Menu 1

- **SOFTWARE VERSION (example: EM53EU1-1.0_01234).** Displays the build in software version. In case of field problems related to software, software flash-RAM pos.7006 must be changed by a new one. Do this via soldering. You will find details of the software versions in the chapter "Software Survey" of the "Product Survey - Colour Television" publication. This publication is generated four times a year.
- **FEATURE BOX.** The 12NC-number of the build in Feature Box software
- **SET TYPE.** This information is very helpful for a helpdesk/ workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set.
- **CODE 1.** Gives the latest 5 errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted. The last occurred error is displayed on the leftmost position. Each error code is displayed as a 3-digit number. When less than 10 errors occur, the rest of the buffer is empty (000). See also paragraph "Error Codes" for a description.
- **CODE 2.** Gives the first 5 errors of the error buffer. See also paragraph Error Codes for a description.
- **VOLUME.** Gives the last status of the volume as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Volume values can be changed via the volume key on the RC-transmitter.
- **BRIGHTNESS.** Gives the last status of the brightness as set by the customer. The value can vary from 0 (brightness is minimum) to 100 (brightness is maximum). Brightness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "BRIGHTNESS".
- **CONTRAST.** Gives the last status of the contrast as set by the customer. The value can vary from 0 (contrast is minimum) to 100 (contrast is maximum). Contrast values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "CONTRAST".
- **COLOUR.** Gives the last status of the colour saturation, as set by the customer. The value can vary from 0 (colour is minimum) to 100 (colour is maximum). Colour values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "COLOUR".
- **HUE.** Only relevant for NTSC-signals (e.g. some NTSC-DVD-discs).

Customer Service Menu 2

- **SHARPNESS.** Gives the sharpness value. The value can vary from 0 (sharpness is minimum) to 7 (sharpness is maximum). In case of bad antenna signals, a too high value of the sharpness can result in a noisy picture. Sharpness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "SHARPNESS".
- **HEADPHONE VOLUME.** Gives the last status of the headphone volume, as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Headphone volume values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "SOUND" and "HEADPHONE VOLUME".
- **SURROUND MODE.** Indicates the by the customer selected surround mode (or automatically chosen mode). In case the set is a Non-Dolby set, there will be displayed "0". If it is a Dolby-set then is displayed: "STEREO", "3 STEREO", "HALL", "3DSURROUND", "DOLBY PRO LOGIC" or "DOLBY DIGITAL". These settings can be influenced after pressing the "MENU" button and selecting "SOUND" and SURROUND MODE". It can also have been selected automatically by signalling bits (internal software).
- **TUNER FREQUENCY.** Indicates the frequency the selected transmitter is tuned to. The tuner frequency can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys for fine tune after opening the installation menu and selecting "INSTALL" and "MANUAL INSTALL".
- **DIGITAL OPTION.** Gives the selected digital mode, "100 HZ", "DIGITAL SCAN", "NATURAL MOTION", "DOUBLE LINES", or "PIXEL PLUS". Change via "MENU", "PICTURE", "DIGITAL OPTIONS".
- **CENTRE TRIM.** Indicates the difference between main volume and volume of centre speaker. Change via: "MENU", "SETUP", "SPEAKERS", and "CENTRE VOLUME" (not available when "Surround Mode" is set to "STEREO" or "HALL"). The value can vary from "-10" to "+10"
- **TV SYSTEM.** Gives information about the video system of the selected transmitter.
  - **BG:** PAL BG signal received.
  - **DK:** PAL DK signal received.
  - **I:** PAL I signal received.
  - **L/La:** SECAM L/La signals received.
  - **M:** NTSC M signal received with video carrier on 38.9 MHz.

Customer Service Menu 3

- **BALANCE.** Indicates the balance settings, between "-50" and "+50". Change via "MENU", "SOUND", and "BALANCE". Not applicable for Dolby Pro Logic sets.
- **CENTRE MODE.** Indicates if centre mode is set "ON" or "OFF". When centre mode is on, all TV speakers are used as one centre speaker. Change Centre mode via "MENU", "SETUP", "SPEAKERS", and "CENTRE MODE".
- **DNR.** Gives the selected DNR setting (Dynamic Noise Reduction), "OFF", "MINIMUM", "MEDIUM", or "MAXIMUM". Change via "MENU", "PICTURE", "DNR"
- **NOISE FIGURE.** Gives the noise ratio for the selected transmitter. This value can vary from 0 (good signal) to 127

(average signal) and to 255 (bad signal). For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".

- **SOURCE.** Indicates which source is used and the video/audio signal quality of the selected source. (Example: Tuner, Video/NICAM) Source: "TUNER", "EXT1", "EXT2", "EXT3", "EXT4", "SIDE", "AV1", "AV2", "AV3" or "AV4". Video signal quality: "VIDEO", "S-VIDEO", "RGB 1FH", "YPBPR 1FH 480P", "YPBPR 1FH 576P", "YPBPR 1FH 1080I", "YPBPR 2FH 480P", "YPBPR 2FH 576P", "YPBPR 2FH 1080I", "RGB 2FH 480P", "RGB 2FH 576P" or "RGB 2FH 1080I". Audio signal quality: "STEREO", "SPDIF 1", "SPDIF 2" or "SPDIF".
- **AUDIO SYSTEM.** Gives information about the audio system of the selected transmitter: "ANALOGUE MONO", "ANALOGUE STEREO", "PCM 2/0", "DD 1/0", "DD 2/0 LtRt", "DD 2/0 L0R0", "DD 2/1", "DD 2/2", "DD 3/0", "DD 3/1", "DD 3/2", "DD 1+1", "MPEG 1/0", "MPEG 2/0", "MPEG 2/0 LtRt", "MPEG 2/1", "MPEG 2/2", "MPEG 3/0", "MPEG 3/1", "MPEG 3/2", "MPEG 1+1" or "MPEG 2+2".
- **TUNED BIT.** Gives information about the tuning method of the stored pre-set. If a channel is found via "automatic installation", you will see the value "Off". When you change this (automatically found) frequency via "fine tune" adjustment (installation menu - manual installation), the displayed value will change to "On". Therefore, when you see the value "On" in this line, it is an indication that the received channel is a non-standard signal (e.g. of a VCR).
- **SURROUND SPEAKERS.** Indicates if the surround speakers are present, "YES" or "NO". Change via "MENU", "SETUP", "SPEAKERS", and "SURROUND SPEAKERS".
- **ON TIMER.** Indicates if the "On Timer" is set "ON" or "OFF" and if the timer is "ON" also displays start time, start day and program number. Change via "MENU", "TV", "FEATURES", and "ON TIMER".
- **PRESET LOCK.** Indicates if the selected preset has a child lock: "LOCKED" or "UNLOCKED". Change via "MENU", "TV", "FEATURES", "CHILD LOCK", and "CUSTOM LOCK".

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- **CHILD LOCK.** Indicates the last status of the general child lock: "UNLOCK", "LOCK", or "CUSTOM LOCK". Change via "MENU", "TV", "FEATURES", "CHILD LOCK", and "LOCK".
- **AGE LOCK.** Indicates the last status of the EPG rating for child lock: "OFF", "4 YEARS", "6 YEARS", "8 YEARS", "10 YEARS", "12 YEARS", "14 YEARS" or "16 YEARS". This is only displayed if child lock is set to "CUSTOM LOCK"
- **LOCK AFTER.** Indicates at what time the child lock is set: "OFF" or e.g. "18:45" (lock time). This is only displayed if child lock is set to "CUSTOM LOCK"
- **CATEGORY LOCK.** Indicates the last status of the EPG theme childlock: "MOVIES", "NEWS", "SHOWS", "SPORTS", "CHILDREN", "MUSIC", "CULTURE", or "SERIES". This is only displayed if child lock is set to "CUSTOM LOCK". It is possible that more than one value is shown.
- **PROGRAM CATEGORY.** Indicates the theme of the selected transmitter: "MOVIES", "NEWS", "SHOWS", "SPORTS", "CHILDREN", "MUSIC", "CULTURE", or "SERIES".
- **TV RATINGS LOCK.** Only applicable for US.
- **MOVIE RATINGS LOCK.** Only applicable for US.
- **V-CHIP TV STATUS.** Only applicable for US.

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- **V-CHIP MOVIE STATUS.** Only applicable for US.
- **OPTIONS 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **OPTIONS 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- **AVL.** Indicates the last status of AVL (Automatic Volume Level): "ON" or "OFF". Change via "MENU", "TV", "SOUND", "AVL"
- **DELTA VOLUME.** Indicates the last status of the delta volume for the selected preset as set by the customer: from "-12" to "+12". Change via "MENU", "TV", "SOUND", "DELTA VOLUME".
- **SURROUND TRIM L.** Indicates the last status of "SURROUND LEFT VOLUME" as set by the customer: from "-10" to "+10". Only available in Digital Dolby sets. Change via "MENU", "SETUP", "SPEAKERS", "SURROUND L VOLUME.
- **SURROUND TRIM R.** Indicates the last status of "Surround Right Volume" as set by the customer: from "-10" to "+10". Only available in Digital Dolby sets. Change via "MENU", "SETUP", "SPEAKERS", "SURROUND R VOLUME.
- **FRONT SPKR DIST.** Indicates the last status of the distance to the front speakers as set by the customer: "1m", "2m", or "3m",.... Change via "MENU", "SETUP", "SPEAKERS", "TO FRONT".
- **SURR. SPKR DIST.** Indicates the last status of the distance to the surround speakers as set by the customer: "1m", "2m", or "3m",. Change via "MENU", "SETUP", "SPEAKERS", "TO SURROUND".

How to exit CSM

Use one of the following methods:

- After you press a key on the RC-transmitter (with exception of the "CHANNEL", "VOLUME" and digit (0-9) keys), or
- After you switch the TV-set "OFF" with the mains switch.

5.3 Problems and Solving Tips (related to CSM)

Note: Below described problems are all related to the TV settings. The procedures to change the value (or status) of the different settings are described above. New value(s) are automatically stored.

5.3.1 Picture Problems

Snowy/noisy picture

1. Check line 24 "Noise Figure". In case the value is 127 or higher, and the value is also high on other programs, check the aerial cable/aerial system. For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".
2. Check lines 11 "Sharpness" and 24 "Noise Figure". In case the value of line 11 is 3 or 4 and the value of line 24 is high (127 or higher), decrease the "Sharpness" value.

Picture too dark

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case the picture improves, increase the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check line 7 "Brightness" and 8 "Contrast". If the value of line 7 is low (< 10) or the value of line 8 is low (< 10), increase the "Brightness" or the "Contrast" value.

Picture too bright

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case the picture improves, decrease the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check lines 7 "Brightness" and 8 "Contrast". If the value of line 7 is high (> 40) or the value of line 8 is high (> 50). Decrease the "Brightness" value or increase the "Contrast" value.

White line around picture elements and text

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case the picture improves, decrease the "Sharpness" value. The new value is automatically stored (in "personal" pre-set) for all TV channels.
2. Check line 11 "Sharpness". Decrease the "Sharpness" value. The new value is automatically stored for all TV channels.

No picture

Check line 27 "Tuned bit". In case the value is "No", install the required program again. Open the installation menu and perform manual installation.

Blue picture

No proper signal is received. Check the aerial cable/aerial system.

Blue picture and/or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Check line 9 "Colour". In case the value is low (< 10), increase the "Colour" value. The new value is automatically stored for all TV channels.

No colours/colour lines around picture elements or colours not correct or unstable picture

1. Check line 20 "TV System". If a "strange" system pops up, something has gone wrong during installation. Re-install the channel.
2. In case line 20 is "L", the installed system for this pre-set is "France", while "West Europe" is required. Install the required program again: open the installation menu and perform manual installation. Select system "West Europe".

Menu text not sharp enough

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case picture improves, decrease the contrast value. The new value(s) are automatically stored for all TV channels.
2. Check line 8 "Contrast". The value of line 8 is high (> 50). Decrease the contrast value.

5.3.2 Sound Problems

No sound from left and right speaker

Check line 6 "Volume". The value is low. Increase the value of "Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

Sound too loud for left and right speaker

Check line 6 "Volume". The value is high. Decrease the value of " Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I2C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.
For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- **Automatic** (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I2C level. ComPair can access the I2C bus of the television. ComPair can send and receive I2C commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I2C busses of the TV-set.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extends. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. Does the screen give a picture? Click on the correct answer: YES / NO) and showing you examples (e.g. Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of pre-sets.
- Managing of pre-set lists.
- Emulation of the Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink. **Example:** *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier.*
  - Click on the "Panel" hyperlink to automatically show the PWB with a highlighted capacitor C2568.
  - Click on the "Schematic" hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 Stepwise Start-up

Under normal circumstances, a fault in the power supply, or an error during start-up, will switch the television to protection mode. ComPair can take over the initialisation of the television. In this way, it is possible to distinguish which part of the start-up routine (hence which circuitry) is causing the problem. Take notice that the transition between two steps can take some time, so give the set some time to reach a stable state. During the transition time the LED can blink strangely.

Stepwise start- up explanation

This is realised via ComPair and is very helpful when a protection is activated (see also chapter "Protections").

Table 5-2 Stepwise start-up table

State	Description mode	Display LED	Enabled protection
0	Low power standby: 5V2/3V3 present, uP in standby-mode	On	None
1	High power Standby: TV-set in standby-mode	Wait 1s, flash 1 x	None
2	Main Power On: HOP in standby, 5V/8V present, I2C protections on, SSB is powered by standby-supply (5V/8V). Degaussing (12 s) has been activated, MSP is reset.	Wait 1s, flash 2 x	4 & 5
3	Initialized (Semi standby): most IC's are initialized, HOP still in standby	Wait 1s, flash 3 x	Plus 1, 6 & 18
4	HOP: HOP fully powered and working, EHT is present, rest of IC's initialized, black current stabilisation is off, picture is still blanked	Wait 1s, flash 4 x	Plus 2 & 16
5	On: TV-set operates, black current stabilisation is on, picture is unblanked.	Wait 1s, flash 5 x	

Note (*):

- When the set is in stepwise mode and, due to stepping-up, a protection is activated, the set will really go into protection (blinking LED). The set will not leave the stepwise-mode however. If state X is the state where the set went to protection, stepwise start-up will return to state X-1. At state (X-1) diagnostic measurements can be performed. Also, in the short time the set is in state X but not yet in protection, you can also do some measurements.

5.4.4 How To Connect

1. First, install the ComPair Browser software (see the Quick Reference Card for installation instructions).
2. Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with "PC") of the ComPair interface.
3. Connect the mains adapter to the supply connector (marked with "POWER 9V DC") of the ComPair interface.
4. Switch the ComPair interface "OFF".
5. Switch the television set "OFF" with the mains switch.
6. Connect the ComPair interface cable between the connector on the rear side of the ComPair interface (marked with "I2C") and the ComPair connector at the rear side of the TV (situated just below the tuner input, see also chapter 4).
7. Plug the mains adapter in a mains outlet, and switch the interface "ON". The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
8. Start the ComPair program and read the "Introduction" chapter.

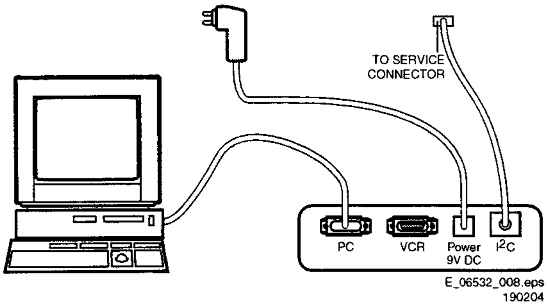


Figure 5-2 ComPair Interface connection

5.4.5 How To Order

ComPair order codes:

- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60070 (year 2002, 3122 785 60110 (year 2003).
- SearchMan32 CD (update): 3122 785 60080 (year 2002), 3122 785 60120 (year 2003).
- ComPair interface cable: 3122 785 90004.
- ComPair firmware upgrade IC: 3122 785 90510.
- Transformer (non-UK): 4822 727 21632.
- Transformer UK: 4822 727 21633.

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes

5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.
When an error has occurred, the error is added to the list of errors, provided the list is not full or the error is a protection error.
When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained), except when the error is a protection error.
To prevent that an occasional error stays in the list forever, the error is removed from the list after 50+ operation hours.
When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

5.5.2 How to read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture). Examples:
  - **0 0 0 0 0:** No errors detected
  - **6 0 0 0 0:** Error code 6 is the last and only detected error
  - **9 6 0 0 0:** Error code 6 was first detected and error code 9 is the last detected error
- Via the blinking LED procedure (when you have no picture). See next paragraph.
- Via ComPair.

5.5.3 How to clear the Error Buffer

Use one of the following methods:

- By activation of the "RESET ERROR BUFFER" command in the SAM menu.
- With a normal RC, key in sequence "MUTE" followed by "062599" and "OK".
- When you transmit the commands "DIAGNOSE" - "99" - "OK" with ComPair (or with a DST).
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

.5.4 Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present. Before clearing the buffer, write down the content, as this history can give you significant information.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

There are various errors:

- I2C device errors.
- I2C bus errors.
- Protection errors.
- Errors not related to an I2C device, but of importance:
  - **BLACK CURRENT LOOP (ERROR 28):** detection of a continuous fail of the black current stabilisation loop of the HOP.
  - **FEM (ERROR 26):** at start-up, after initialisation of the PICNIC, the presence of the FALCONIC can be checked.
  - **EAGLE (ERROR 27):** at start-up, after initialisation of the PICNIC, the presence of the Eagle can be checked.

Table 5-3 Error table.

Error	Device	Description	Def. item	Defect. module indication	Diagram
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
2	Hfail Protection	Horizontal Flyback protection	/	Horizontal Flyback	/
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5V	5V protection	/	+5V Supply	B5a
5	Supply 8V	8V protection	/	+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6	/	Slow I2C Blocked	/
7	TDA9330	HOP High-end Output Processor	7301	Video Controller	B4
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
12	TDA9178	Topic	7302	Video Controller	B4
13	UV1318/...	Tuner protection	1T01	Tuner	A8
14	MSPxxxx	ITT sound processor	7651	Audio module	B6a
16	FBX	Feature Box Protection	/	+3V (Fbx) Supply	B3
18	Fast I2C bus blocked	Spontaneous blinking error 18	/	Fast I2C Blocked	/
19	TDA8444	Auto Scavem DAC	7500	Auto Scavem	SC1
26	SAA4998	FEM	7760	+3V (Fbx) Supply	B3b
27	T6TX5EF	Eagle	7720	+3V (Fbx) Supply	B3c
28	Black current loop	Black current loop	/	Video Controller	/
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
35	T6TU5XB	Columbus	7752	Video Controller	B3d

Note:
Error codes 1, 6, or 18 are protection codes and in this case, supplies of some circuits will be switched "OFF". Also, in protection, the LED will blink the number of times equivalent to the most recent error code.

.6 The Blinking LED Procedure

.6.1 Introduction

Via this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful for fault finding, when there is no picture.

When the SDM is entered, the front LED will show (blink) the contents of the error-buffer. Error-codes = 10 are shown as follows:

- A long blink of 750 ms (which is an indication of the decimal digit),
- A pause of 1.5 s,
- "n" short blinks (where "n" = 1 - 9),
- When all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
- The sequence starts again.

Example: Error 12 9 6 0 0.
After activation of the SDM, the red front LED will show:

- 1 long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s,
- 2 short blinks followed by a pause of 3 s,
- 9 short blinks followed by a pause of 3 s,
- 6 short blinks followed by a pause of 3 s,
- 1 long blink of 3 s to finish the sequence,
- The sequence starts again.

Note: If errors 1, 6 or 18 occur, the LED always gives the last occurred error even if the set is NOT in service mode.

5.6.2 How to Enter

Use one of the following methods:

- Enter the SDM (only via soldering pads marked "SDM" on SSB). The blinking red front LED will show the entire contents of the error buffer (this works in "normal operation" mode and in "protection" mode).
- Transmit the commands "MUTE" - "062500" - "OK" with a normal RC. The complete error buffer is shown. Take notice that it takes some seconds before the blinking led LED starts.
- Transmit the commands "MUTE" - "06250x" - "OK" with a normal RC (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... Take notice that it takes some seconds before the blinking led LED starts.
- "DIAGNOSE X" with the DST (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... When x = 0 all errors are shown.

5.7 Protections

5.7.1 Introduction

This chassis has only one microprocessor (OTC), which remains active during Standby. This because power of the microprocessor and the attached memory chip set is coming from the 3V3 supply, which is derived from the 5V Standby-circuitry. Therefore, in both Power-on as in Standby mode, the microprocessor is connected to this power supply.

If a fault situation is detected, an error code will be generated and if necessary, the set is put in protection mode. The protection mode is indicated by the blinking of the front LED at a frequency of 3 Hz (or by a coded blinking in special cases). In some error cases however, the microprocessor does not put the set in the protection mode (this is the case with the - hardware - loudspeaker protection of the audio amplifier).

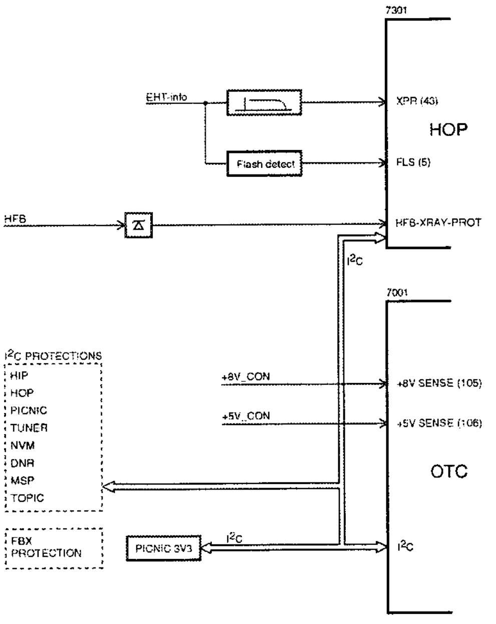
The content of the error buffer can be read via the service menu (SAM), the blinking LED procedure or via DST/ComPair.

To get a quick diagnosis, this chassis has three service-modes implemented:

- The **Customer Service Mode (CSM).**
- The **Service Default Mode (SDM).** Start-up of the set in a predefined way.
- The **Service Alignment Mode (SAM).** In this mode, items of the set can be adjusted via a menu.

You can enter both SDM and SAM modes via the 'service pads' on the SSB, via an RC-transmitter (DST or standard RC), or via ComPair. It is not possible to enter the SAM in "standby"; the TV has to be in "normal operation" mode.

The "Protection Diagram" shows the structure of the protection system. See diagram below.



CL 16532044_024.eps
090501

Figure 5-3 Protection diagram

There are several types of protections:

- I2C related protections.
- OTC related protections (via polling on I/O pins or via algorithms).
- HOP related protections (mainly for deflection items).
- Hardware errors that are not sensed by the OTC (e.g. vertical flyback protection, bridge coil protection, E/W protection, arcing protection).

All protections are explained below.

5.7.2 I2C Related Protections

In normal operation, some registers of the I2C controlled ICs are refreshed every 200 ms. During this sequence, the I2C busses and the I2C ICs are checked.
An I2C protection will take place if the SDA and SCL lines are short-circuited to ground, or to each other. An I2C error will also occur, if the power supply of the IC is missing (e.g. FBX_PROT (error 16)).

5.7.3 OTC Related Protections

If a protection is detected at an OTC input, the OTC will start to scan all protection inputs every 200 ms for 5 times. If the protection on one of the inputs is still active after 1 s, the microprocessor will put the set in the protection mode.
Before the scanning is started, a so-called "ESD refresh" is carried out. This is done, because the interrupt on one of the inputs is possibly caused either by a flash or by ESD. As a flash or ESD can influence IC settings, the HIP, MSP, 3D Comb (US only) and wireless module are initialised again, to ensure the normal picture and sound conditions of the set.

8 V and 5 V protection: The microprocessor senses the presence of the 8 V and 5 V (via the "+5V_CON" and "+8V_CON" lines). If one (or both) of these voltages is (are) not present, an error code is stored in the error buffer of the NVM, and the set is put in the protection mode.

5.7.4 HOP Related Protections

Every 200 ms, the status register of the HOP is read by the OTC (via the I2C bus). If a protection signal is detected on one of the inputs of the HOP, the relevant error bit in the HOP register is set to "high". If this error bit is still "high" after 1 s, the OTC will store the error code in the error buffer of the NVM and, depending on the relevancy of the error bit, the set will either go into the protection mode or not.

The following protections are implemented:

- **HFB (Horizontal Flyback):** If the horizontal flyback is not present, this is detected via the HOP (HFB_X-RAY_PROT). One status bit is set to "high". The error code is stored in the error buffer and the set will go into the protection mode.
- **XPR (X-ray protection):** If the HFB pulses are too low (level detection), the HOP will detect this via the XPR-bit. The error will be logged in the error buffer and the set will go into protection mode.

Note: Both errors will be logged as HFB-failure.

5.7.5 Hardware Related Protections

Due to the architecture ("hot" deflection), some protections cannot be sensed by the microprocessor. Three of these protections will lead to a protection on set level (Standby mode and blinking LED), while another will only lead to a circuit protection.

TV-set Protection

The following fault conditions will lead to a "complete" set protection:

- **BRIDGECOIL protection:** This is sensed via the "EW" signal going to the base of TS7652 (via R3495 and D6499). In a normal situation, the voltage on C2498 (diagram A4) is high and TS7652 is conducting. When bridge coil 5422 (diagram A3) is short circuited, the voltage on C2498 changes to low, which will block TS7652. In this case, also TS7641 will block and the voltage on 2642 will rise until TS7443 is forced in conduction. The "SUP-ENABLE" signal (in normal operating condition -20 V) is shorted now to ground level, which will force the Main Power Supply to Standby mode.

- **ARC protection:** If there are "open" connections (e.g. bad solder joints) in the high-energy deflection circuitry, this can lead to damaging effects (read: fire). For that reason, the E/W current is sensed (via 3479//3480). If this current becomes too high, the "thyristor" circuit (TS7653 and TS7654) is triggered. TS7442 is switched "on" and TS7443 is forced into conduction. . The "SUP-ENABLE" signal is shorted now to ground level, which will force the Main Power Supply to Standby mode.
- **NON_VFB (No vertical Flyback) protection:** If the frame stage generates no pulses, TS7641 will block. TS7443 is now switched "on", which will lead to Standby mode. Therefore, in normal operation condition, TS7641 and TS7652 are conducting, while TS7443 is blocked.

Circuit Protection

The following fault condition will lead to a "partly" set protection:

- **PROT1 (DC) protection:** When a DC-voltage (positive or negative) is sensed on one of the loudspeaker outputs, the protection circuit (TS7704, 7705, 7706 and 7707 in diagram A6) will put the IC7700 in Standby mode (via tri-state input pin 6). For more details, see chapter "Circuit Descriptions".

5.8 Repair tips

5.8.1 Miscellaneous

The relay you hear when you switch the set "on" (from Standby or via the mains switch), is from the degaussing circuitry. It is not used for switching the Power Supply (as done in the MG-chassis).

Take care not to touch the "hot" heatsink while disconnecting the SSB, despite the fact that the mains cord is out of the mains socket. There can still be an annoying rest-voltage on the heatsink for a short while. This, because the discharge resistors 3502 and 3503 (on the LSP between hot and cold part) are not stuffed for Europe. Instead, discharge resistors 3066 and 3057 on the Mains Switch panel are used, but because they are located before the Mains switch, they only discharge when this switch is "on".
Advice: when you remove the SSB, disconnect the Mains cord, but keep the Mains Switch "on".

Do not try to measure on the SSB side, which is facing the 'hot' heatsink. This is dangerous. Most service test points are guided to the 'tuner' side and are indicated by the 'service' printing.
Where the circuitry was too "crowded" for service printing, you can find the correct location on the "test point overviews" in this manual.
A very large part of the LSP is "**hot**", such as:

- The primary part of the Standby Supply.
- The whole Main supply (except for the secondary Audio supply).
- And the complete deflection circuitry (so notice that the deflection coil is hot!).

5.8.2 Start-up Sequence

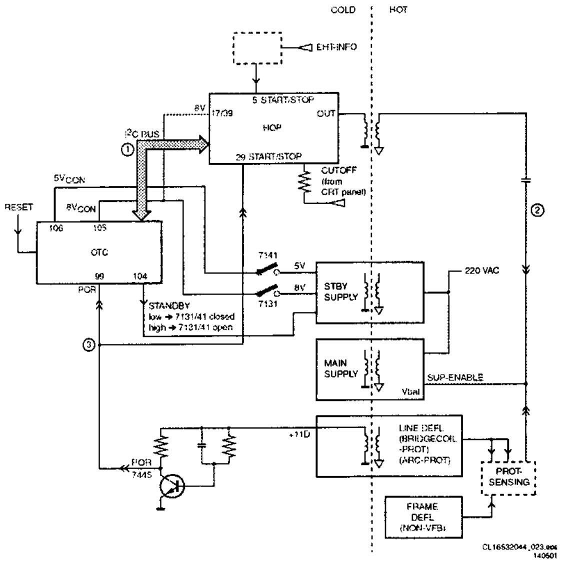


Figure 5-4 Start-up circuitry

The start up sequence differs from other sets (e.g. MG-sets or EM2E-sets, but is same as in EM3E-set):

1. When the set is switched "on", the 5 and 8 V lines ("+5V_CON" and "+8V_CON") of the standby power supply are activated.
2. After the OTC senses them, the P will address the HOP via the I2C-bus, to start the drive [1].
3. Via the "SUP-ENABLE" signal, the Main Supply is switched "on" and will deliver the V_BAT to the Line deflection stage [2].
4. EHT generation is now started.
5. The OTC will un-blank the picture.
6. When you switch "off" the set, this is done in a controlled way via the POR signal [3].

Note: Standby is not directly achieved via the Standby line of the microprocessor, but indirectly via the HOP circuitry.

5.8.3 ComPair

This chassis does not have an IR transmitting LED (as in MG-sets). Therefore, a "Service" (ComPair) connector is implemented at the rear side of the set, which is directly accessible (as in A10-, EM2E-, EM3E and EM5E-sets). In addition to this, there is also a blinking LED procedure to show the contents of the error buffer.

When you use ComPair, you have the possibility to activate a "stepwise start-up" mode. With this mode, you can initiate the start-up sequence step by step. This also means that in certain steps, some protections are not activated. This is sometimes very convenient during repair.

5.8.4 Protections

Activating SDM via the "service pads" will overrule the processor-controlled protections, but not the hardware protections. This means, that the A/D-input protections (5 and 8 V) and the I2C "not-acknowledging" info of the feature box (FBX) and of the Tuner are overruled.
Caution: When doing this, the service technician must know what he is doing, as it could lead to damaging the set.

The "ARC"- and/or "BRIDGECOIL" protection are hardly ever triggered, however:

- When you suspect the "ARC" protection, look for bad solder joints and smell. By interrupting resistor 3497, this protection is disabled (special attention needed!).
- When you suspect the "BRIDGECOIL" protection, which can also be due to a too wide picture amplitude, shorten G and S of the E/W MOSFET 7480. This will disable the protection. You will now have minimal horizontal amplitude. Re-align the horizontal amplitude in the SAM menu and remove the G/S short of TS7480.

5.8.5 Main Supply

The simplest way is, to replace the components of the Main Supply with repair kit 3122 785 90310.

More detailed way:

1. Replace FET 7504 and zener 6505.
2. Remove the SSB panel.
3. Short B and E of TS7529, in order to put the Main Supply in "on"-mode (TS7529 is blocking then). **Caution:** To prevent that R3403 and TS7443 will be damaged, **first disable the HW-protection of the deflection circuit.** Therefore short circuit C2642 on the LSP (diagram A4).
4. Attach a load of 500 O to V_BAT capacitor C2515 (the supply can not work without a minimum load).
5. Use a variac, and slowly increase the V_MAINS. Measure over sensing resistors R3514//15, if a nice sawtooth voltage becomes available.
6. Also measure the V_BAT. This may never exceed +141 V. If it does, there is something wrong in the feedback circuitry (e.g. regulator 7506).

Note: Be careful when measuring on the gate of FET TS7504. This circuitry is very high ohmic and can easily be damaged (first connect ground to measuring equipment, than measure the gate).

5.8.6 Standby Supply

The simplest way is to replace the components of the Standby Supply with repair kit 3122 785 90460.

5.8.7 Line Deflection

The simplest way is to replace the components of the Line Deflection circuitry with repair kit 3122 785 90330.

5.8.8 Frame Deflection

Caution: When the Frame Deflection circuitry is suspected, one must be careful. Because there is a DC-voltage on the frame deflection, **the beam current could damage the CRT neck, leading to a defective CRT.**

To prevent this from happening, you must:

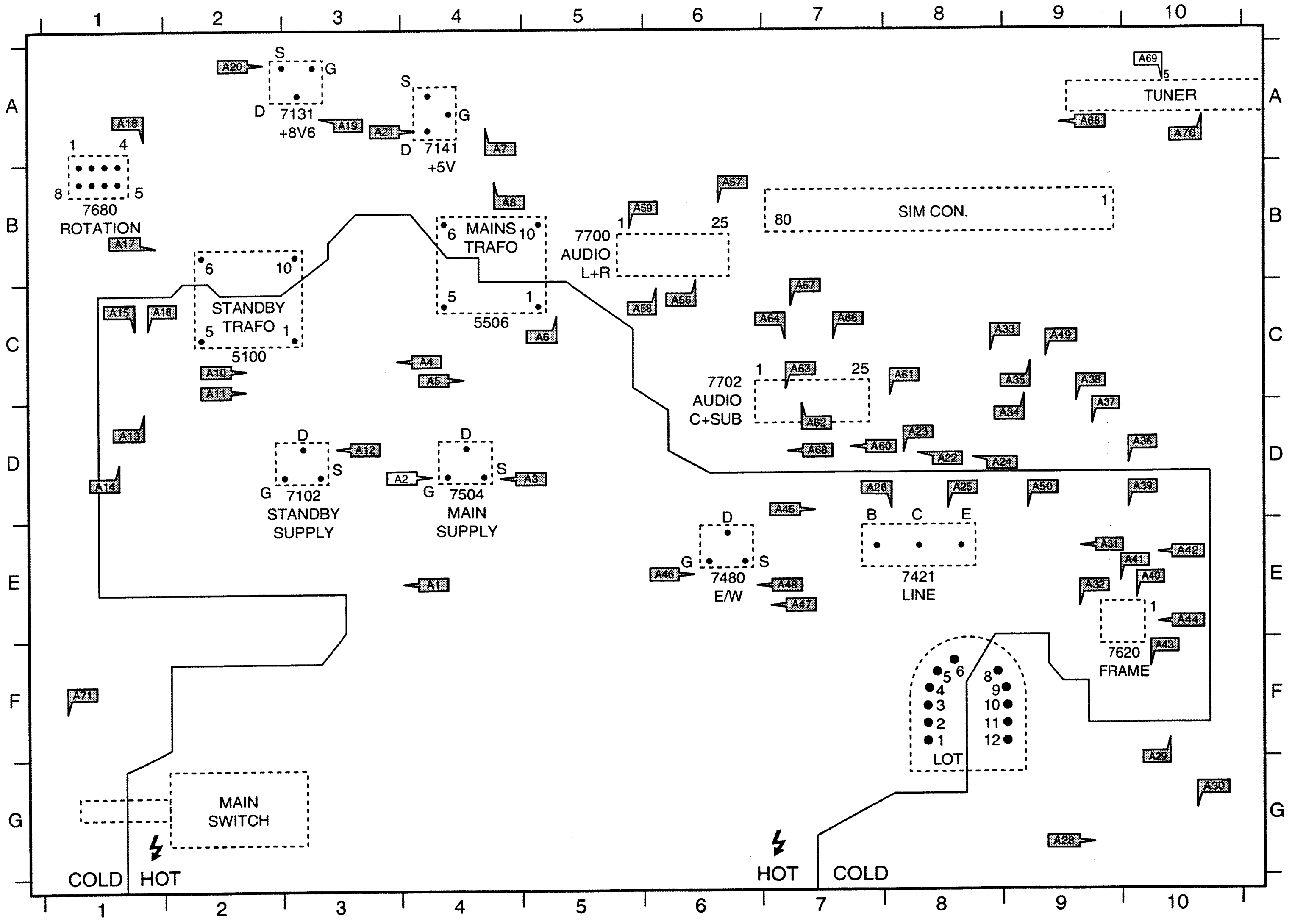
1. Interrupt the resistors 3403 and 3404 on the CRT panel (diagram F1), in order to remove the "filament" voltage from the tube (no beam current, so no chance of destroying the CRT).
2. Interrupt resistor 3403 on the LSP (diagram A4) to disable the "SUP-ENABLE" line.
3. Measure with a multi-meter, or better with a oscilloscope, the functionality of the Frame stage.
4. After you have found the cause, exchange the defective component (e.g. TDA8177), and re-solder the interrupted resistors.

Table 5-4 Repair Tips

Phenomenon	Possible Cause	Repair tip
No picture, no LED.	Standby Supply defective.	Measure circuitry (see diagram A2). Start at test-point A19. When the Mains switch is 'on', this voltage must always be available
No picture, no LED.	Bad connection of SSB in SIMM-connector.	In case of a bad connection, it can happen that there is no picture, and that the Standby LED is not controllable. Re-place the SSB.
No picture, LED blinking at 3 Hz.	Set is in protection due to various causes. For error codes see error-code list.	You have no picture, so: - Read the error buffer via ComPair (error buffer is accessible when set is in protection, compare-file will guide you to this) - Read the blinking LED information via standard remote command <mute>06250X<ok> - Or you read the error code sequence via standard remote command <mute>062500<ok>. When you have found the error, check the circuitry related to the supply voltage and I^2C-communication or the circuitry that triggers the protection.
No picture, LED blinking with code 6-6-6 or 18-18-18.	No communication on slow I^2C- or fast I^2C-bus.	As processor cannot communicate with one of the 2 busses it the standby-led spontaneously starts blinking 6-6-6... or 18-18-18... If in the error buffer somewhere is an error 6 or 18, these will have the highest priority starting the mentioned blinking. Measure dependent of the error on the I^2C-bus which device is loading the bus. (Use I^2C -overview)
No picture, LED blinking with code 1-1-1.	No communication on NVM- I^2C bus to the uP.	As the uP cannot communicate with the NVM I^2C bus, it spontaneously starts blinking 1-1-1. Note: when there is no access to the NVM, a lot of picture setting can go wrong.
No picture, no sound. Set is making audible squeaking sound	Supply is possibly in hiccup-mode, which is audible via a squeaking supply transformer.	Possible causes: - V_{BAT} is shorted (caused by short circuited line transistor 7421), or - Sound winding is shorted (amplifier is shortening the power supply lines), or - D6514 is shorted (due to a too high V_{BAT}). Remove excessive load, to see what causes the failure, or check feedback circuit. See repair tip 'Main Power Supply' (supply needs a minimal load).
No picture, no sound. Power LED works fine	Supply does not work correctly.	If e.g. V_{BAT} is only about 90 V, it is possible that the regulator IC (7506) is defective.
No RC-reception. LED does not echo RC-commands.	uP circuitry or RC-receiver is defective.	In case the set does react on a local keyboard operation, you must check the RC-receiver circuitry.
Relay (degaussing) is not audible, when set is switched from 'off' or 'standby' to 'on'.	uP is not working correctly.When pin 115 is low, the degaussing must be activated.	Check RESET-circuitry on diagram B5. Check the level on pin 115 when you switch the set 'on'. Signal must be low initially and go to high after approx. 12 s.
Picture is rotated.	Rotation circuitry on diagram A5, or related supply to it, malfunctions.	Measure test points on diagram A5.
Picture is continuously switching 'off' and 'on', showing heavy 'switch' spots (set does not go into protection).	200 V is missing on CRT panel.	Probably a bad connection from LSP connector 1424 to CRT connector 1424 (diagram F), or an interruption of the 200 V supply line (e.g. R3341 on circuit F is interrupted).
Picture is not sharp.	Focus is possibly mis-aligned or SCAVEM-circuitry does not work correctly.	Re-align the 'focus' potmeter on the Line Output Transformer, or check the SCAVEM circuitry on the CRT-panel (diagram F). It is also possible that the DAF circuitry is defective (see diagram I). Check the Vdc values.
Picture is not synchronised.	The sync is derived in the HIP from x-tal 1305 and/or 1308.	Maybe the crystals 1305 and/or 1308 are making a bad contact.
Picture is distorted.	Check video-path in Service Default Mode.	Investigate whether there is an error code present in the error buffer. In case there is one, check the I^2C -bus and/or supply lines (see overview supply lines). Measure and check signal path Tuner-HIP-PICNIC-HOP-RGB amplifier.In case it is a geometry issue, check on diagram A4 opto-coupler 7482, Opamps 7440/7450 and the Frame circuitry alignments or a possible corrupted NVM (7011) on diagram B5.
No menu, no OSD.	Probably a defective uP.	Measure test points B61to B64 on diagram B5.
How to measure if soldering connections of a BGA are OK		For most BGA's the pins/balls are ESD protected via diodes to ground, it is possible to measure these diodes with a multi-meter. Overload means no or bad connection.
How to measure on other IC's		It is advisable to measure both on the pins itself and the solder pads on the PWB. This to find possible solder faults.

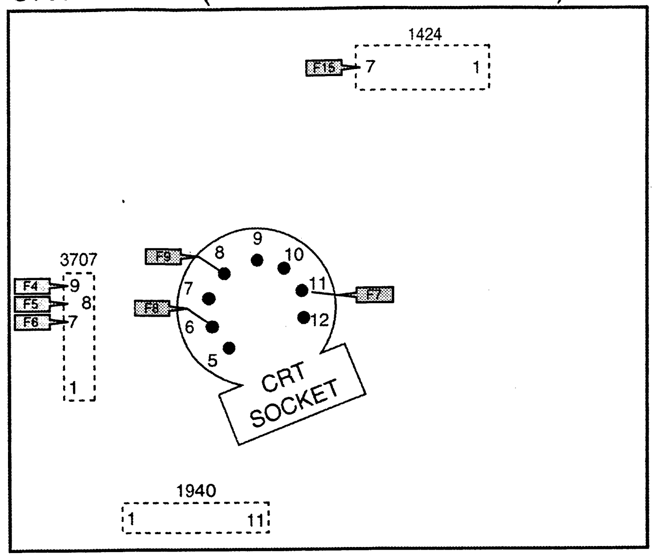
Testpoint Overview LSP and CRT Panel

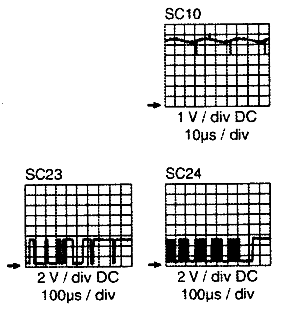
LSP COPPER TRACK SIDE


1 2 3 4 5 6 7 8 9 10
A B C D E F G
A20 S G D 7131 +8V6 A19
S G A21 D 7141 +5V A7
A18 1 4 8 5 7680 ROTATION A17
A8 6 MAINS 10 TRAFO 5 1 5506 A6
6 10 STANDBY 5 TRAFO 1 5100
A15 A16 A10 A11
A59 1 25 7700 AUDIO L+R A58 A56
A57 80 SIM CON. 1
A69 5 TUNER A88 A70
A4 A5
A67 A64 A66 A63 A61
7702 AUDIO C+SUB 1 25 A62 A60
A33 A49 A35 A38 A34 A37
A13 A14
D S G 7102 STANDBY SUPPLY A12
A2 D S G 7504 MAIN SUPPLY A3
A68 A23 A22 A24 A36
A45 A26 A25 A50 A39
D G S 7480 E/W A46 A48 A47
B C E 7421 LINE
A1
A31 A42 A41 A40 A32 A44 1 7620 FRAME A43
A71
6 5 4 3 2 1 8 9 10 11 12 LOT
A29 A30 A28
MAIN SWITCH
COLD HOT HOT COLD

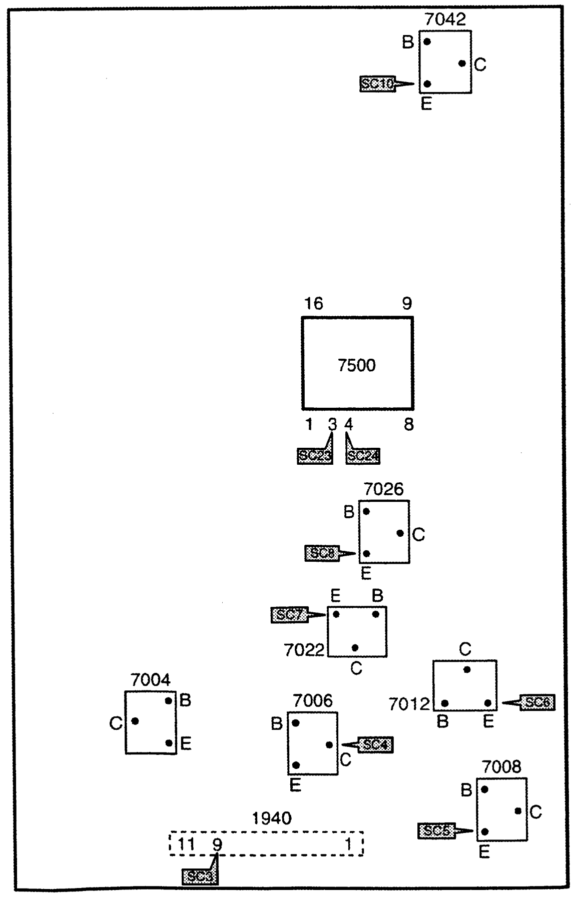
A1	E4
A3	D4
A4	C4
A5	C4
A6	C5
A7	A4
A8	B4
A10	C2
A11	C2
A12	D3
A13	D1
A14	D1
A15	C1
A16	C1
A17	B1
A18	A1
A19	A3
A20	A2
A21	A3
A22	D8
A23	D8
A24	D8
A25	D8
A26	D7
A28	G9
A29	G10
A30	G10
A31	E9
A32	E9
A33	C8
A34	D9
A35	C9
A36	D10
A37	D9
A38	C9
A39	D10
A40	E10
A41	E10
A42	E10
A43	F10
A44	E10
A45	D7
A46	E6
A47	E7
A48	E7
A49	C9
A50	D9
A56	C6
A57	B6
A58	C6
A59	B5
A60	D7
A61	C8
A62	D7
A63	D7
A64	C7
A66	C7
A67	C7
A70	A10
A71	F1
A88	A9

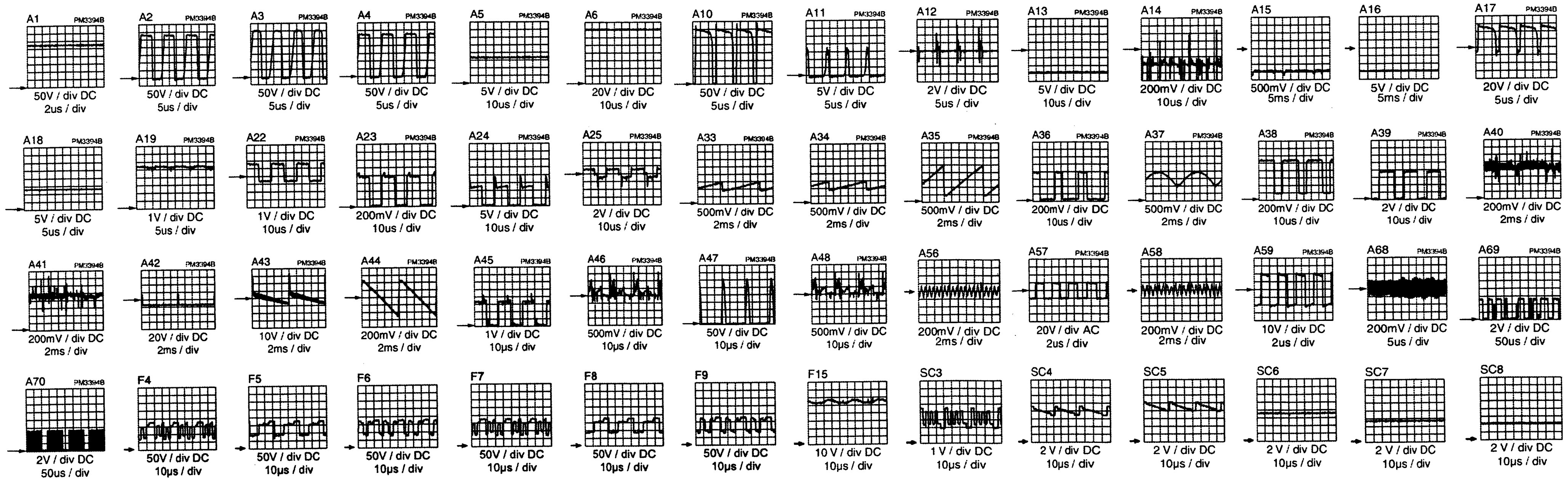
CRT PANEL (COPPER TRACK SIDE)


1424
F15 7 1
3707
F4 9
F5 8
F6 7
1
F9 F8
9 8 10 7 11 6 12 5
F7
CRT SOCKET
1940
1 11



AUTO SCAVEM PANEL (COPPER TRACK SIDE)


7042
B C E
SC10
16 9
7500
1 3 4 8
SC23 SC24
7026
B C E
SC8
SC7
E B
7022
C
7004
C B E
7006
B C E
SC4
7012
C
B E
SC6
7008
B C E
SC5
1940
11 9 1
SC3



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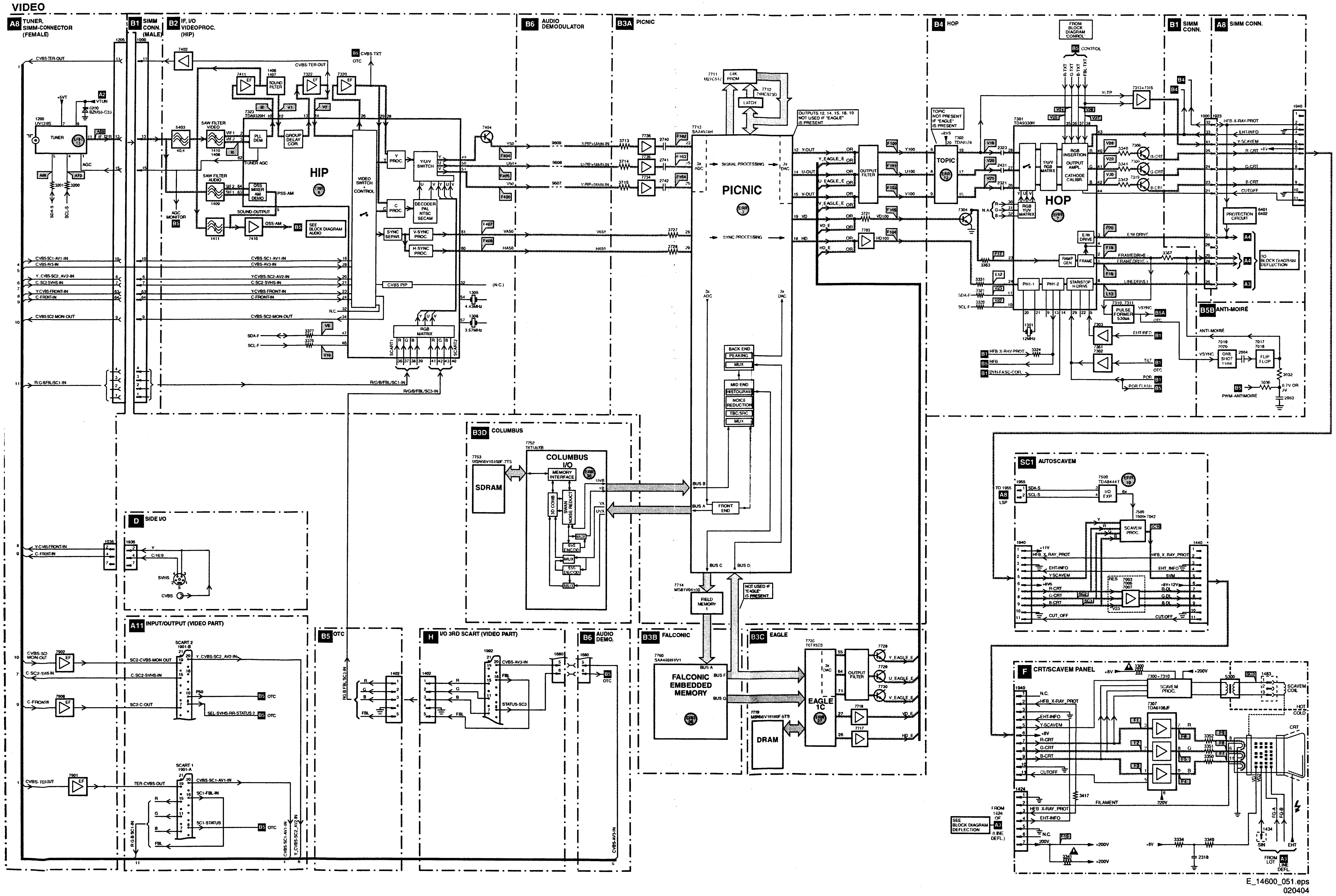
260304

Block Diagram Video


VIDEO
A8 TUNER, SIMM-CONNECTOR (FEMALE)
B1 SIMM CONN. (MALE)
B2 IF, I/O VIDEOPROC. (HIP)
B6 AUDIO DEMODULATOR
B3A PICNIC
B4 HOP
B1 SIMM CONN.
A8 SIMM CONN.
TUNER
HIP
PICNIC
HOP
TOPIC
SAW FILTER VIDEO
SAW FILTER AUDIO
PLL DEM
GROUP DELAY COR.
SOUND FILTER
VIDEO SWITCH CONTROL
Y PROC.
C PROC.
Y/U/V SWITCH
DECODER PAL NTSC SECAM
SYNC SEPAR
V-SYNC PROC.
H-SYNC PROC.
RGB MATRIX
SEE BLOCK DIAGRAM AUDIO
64K PROM
LATCH
SIGNAL PROCESSING
SYNC PROCESSING
OUTPUTS 12, 14, 15, 18, 19 NOT USED IF "EAGLE" IS PRESENT
TOPIC NOT PRESENT IF "EAGLE" IS PRESENT
OUTPUT FILTER
RGB INSERTION
OUTPUT AMPL.
CATHODE CALIBR.
Y/U/V RGB MATRIX
RGB YUV MATRIX
FROM BLOCK DIAGRAM CONTROL
PROTECTION CIRCUIT
TO BLOCK DIAGRAM DEFLECTION
E/W DRIVE
RAMP GEN
FRAME
PH1-1
PH1-2
STARTSTOP H-DRIVE
PULSE FORMER 530ns
B5B ANTI-MOIRÉ
ONE SHOT 11ms
FLIP FLOP
PWM-ANTIMOIRÉ
BACK END
PEAKING
MUX
MID END
HISTOGRAM
NOISE REDUCTION
TBC/SRC
FRONT END
BUS A
BUS B
BUS C
BUS D
B3D COLUMBUS
SDRAM
COLUMBUS I/O
MEMORY INTERFACE
3D COMB
SWAN NOISE REDUCT
656 ENCOD
656 DECOD
FIELD MEMORY
NOT USED IF "EAGLE" IS PRESENT
D SIDE I/O
SVHS
CVBS
A11 INPUT/OUTPUT (VIDEO PART)
SCART 2
SCART 1
B5 OTC
H I/O 3RD SCART (VIDEO PART)
B6 AUDIO DEMO.
B3B FALCONIC
FALCONIC EMBEDDED MEMORY
B3C EAGLE
EAGLE 1C
DRAM
SC1 AUTOSCAVEM
I/O EXP
SCAVEM PROC.
F CRT/SCAVEM PANEL
SCAVEM PROC.
SCAVEM COIL
CRT
FILAMENT
SEE BLOCK DIAGRAM DEFLECTION
FROM LOT LINE DEFL.
EHT

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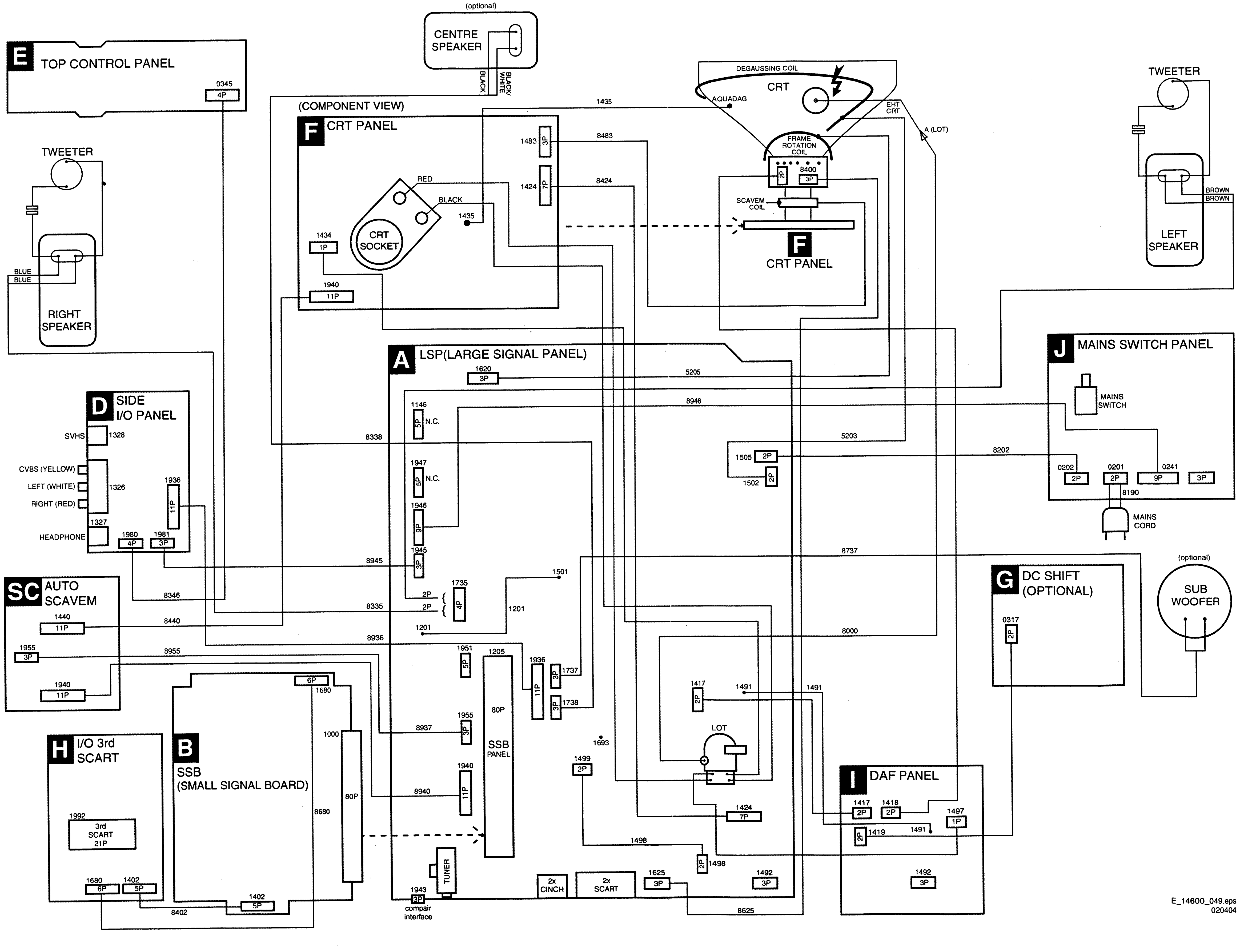
020404

6. Block Diagrams, Test Point Overview, and Waveforms

Wiring Diagram


(optional)
CENTRE SPEAKER
BLACK
BLACK/WHITE
E TOP CONTROL PANEL
0345
4P
(COMPONENT VIEW)
F CRT PANEL
1483
3P
1424
7P
RED
BLACK
1435
CRT SOCKET
1434
1P
1940
11P
1435
8483
8424
DEGAUSSING COIL
CRT
AQUADAG
EHT CRT
A (LOT)
FRAME ROTATION COIL
2P
8400
3P
SCAVEM COIL
F CRT PANEL
TWEETER
LEFT SPEAKER
BROWN
BROWN
TWEETER
BLUE
BLUE
RIGHT SPEAKER
A LSP(LARGE SIGNAL PANEL)
1620
3P
5205
8946
1146
5P
N.C.
8338
1947
5P
N.C.
1946
9P
1945
3P
8945
5203
1505
2P
1502
2P
8202
J MAINS SWITCH PANEL
MAINS SWITCH
0202
2P
0201
2P
0241
9P
3P
8190
MAINS CORD
D SIDE I/O PANEL
SVHS
1328
CVBS (YELLOW)
LEFT (WHITE)
RIGHT (RED)
1326
1936
11P
1327
HEADPHONE
1980
4P
1981
3P
8737
1501
1735
4P
2P
2P
8346
8335
1201
1201
G DC SHIFT (OPTIONAL)
0317
2P
(optional)
SUB WOOFER
SC AUTO SCAVEM
1440
11P
8440
8936
1955
3P
8955
1940
11P
8000
1951
5P
1205
1936
11P
3P
1737
3P
1738
80P
SSB PANEL
1955
3P
8937
1940
11P
8940
6P
1680
1000
80P
8680
B SSB (SMALL SIGNAL BOARD)
H I/O 3rd SCART
1992
3rd SCART 21P
1680
6P
1402
5P
1402
5P
8402
1417
2P
1491
1491
LOT
1693
1499
2P
1424
7P
1498
2P
1498
I DAF PANEL
1417
2P
1418
2P
1497
1P
2P
1419
1491
1492
3P
TUNER
1943
3P
compair interface
2x CINCH
2x SCART
1625
3P
1492
3P
8625
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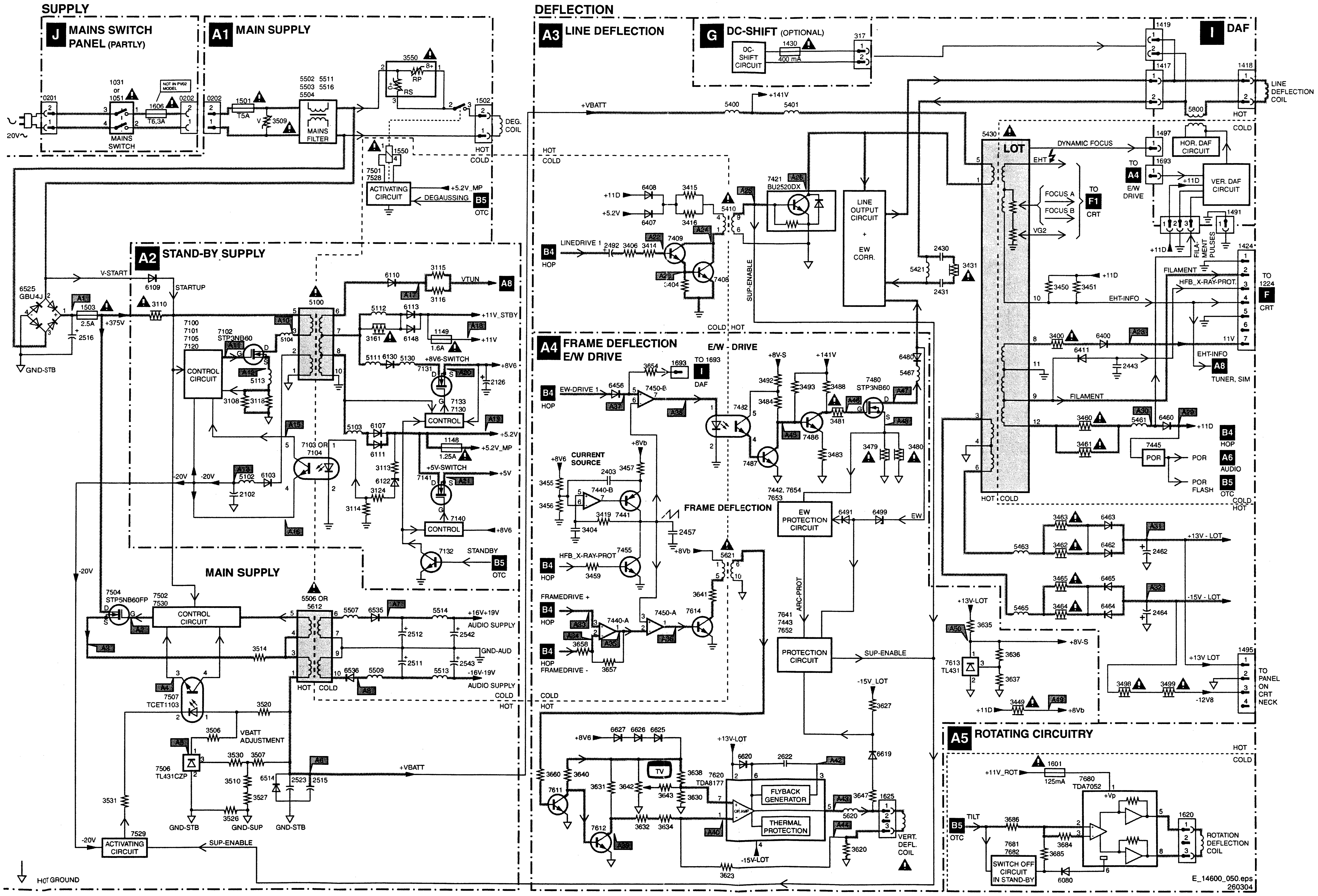
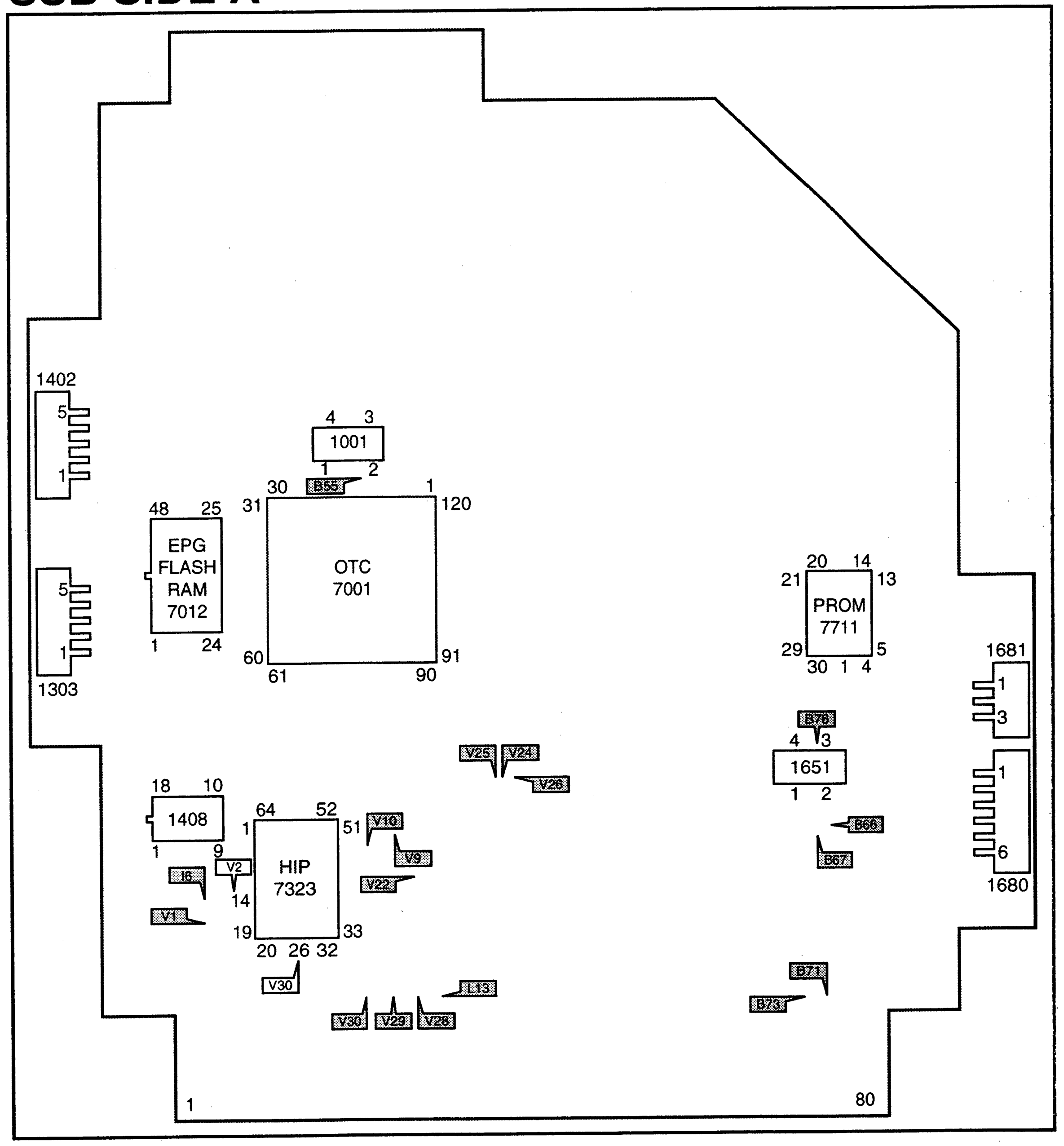
020404

Block Diagram Supply and Deflection

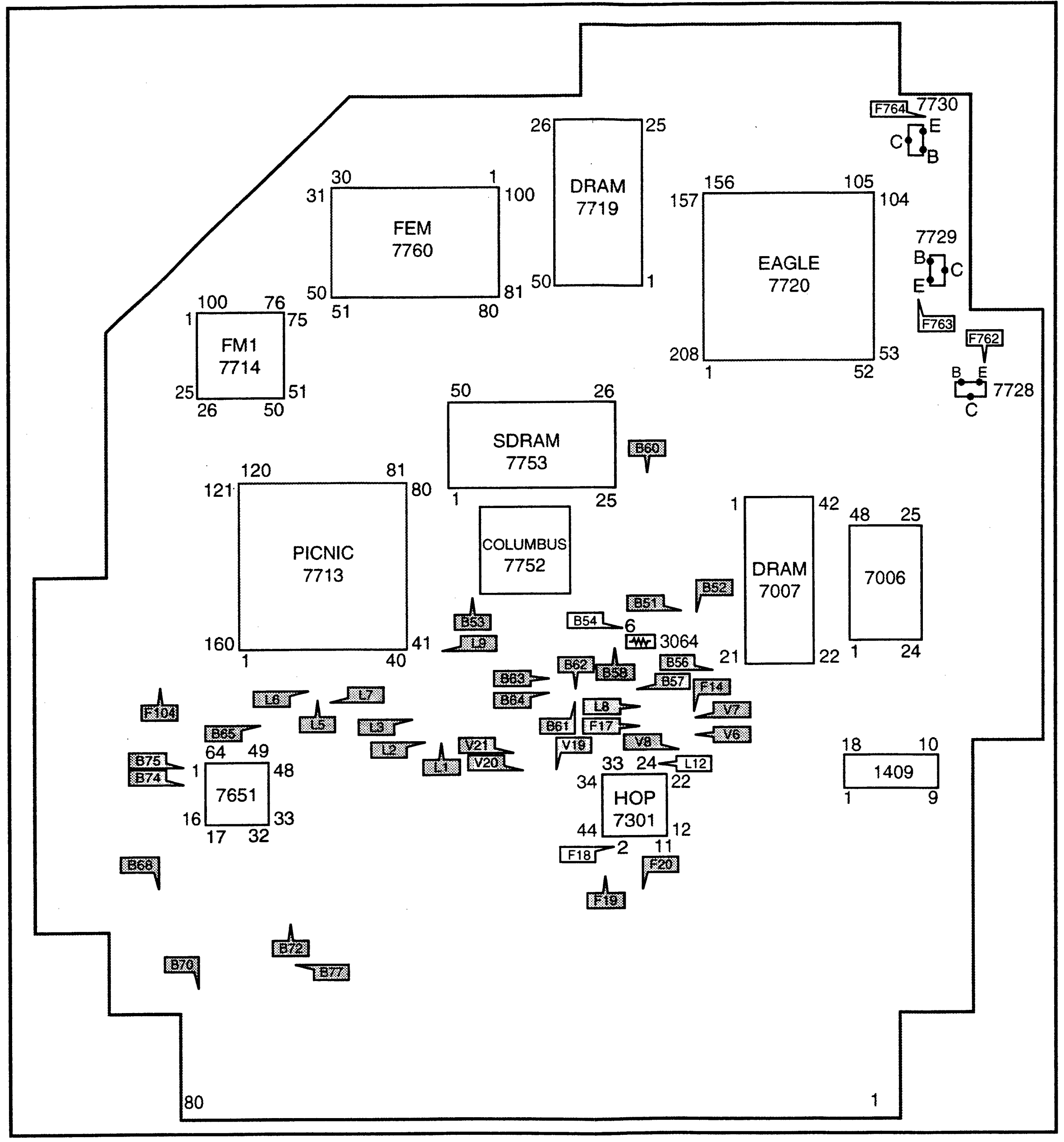

SUPPLY
J MAINS SWITCH PANEL (PARTLY)
A1 MAIN SUPPLY
A2 STAND-BY SUPPLY
MAIN SUPPLY
DEFLECTION
A3 LINE DEFLECTION
G DC-SHIFT (OPTIONAL)
I DAF
A4 FRAME DEFLECTION E/W DRIVE
E/W - DRIVE
FRAME DEFLECTION
A5 ROTATING CIRCUITRY
MAINS SWITCH
MAINS FILTER
DEG. COIL
ACTIVATING CIRCUIT
DEGAUSSING
CONTROL CIRCUIT
CONTROL
STANDBY
VBATT ADJUSTMENT
SUP-ENABLE
+VBATT
+141V
LOT
DYNAMIC FOCUS
EHT
FOCUS A
FOCUS B
VG2
TO F1 CRT
TO A4 E/W DRIVE
HOR. DAF CIRCUIT
VER. DAF CIRCUIT
LINE DEFLECTION COIL
LINE OUTPUT CIRCUIT + EW CORR.
FILAMENT
EHT-INFO
HFB_X-RAY-PROT.
TO 1224 F CRT
TUNER, SIM
POR
POR FLASH
+13V - LOT
-15V - LOT
TO PANEL ON CRT NECK
EW PROTECTION CIRCUIT
PROTECTION CIRCUIT
CURRENT SOURCE
FLYBACK GENERATOR
THERMAL PROTECTION
VERT. DEFL. COIL
ROTATION DEFLECTION COIL
SWITCH OFF CIRCUIT IN STAND-BY
HOT GROUND
GND-STB
HOT
COLD
E_14600_050.eps
260304

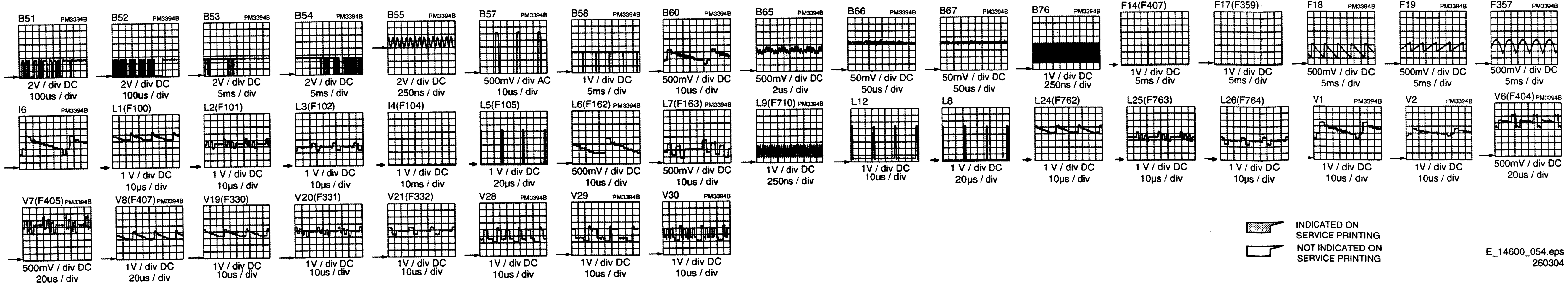
Testpoint Overview Small Signal Board

SSB SIDE A


1402
5
1
1303
EPG FLASH RAM 7012
48 25 1 24
1001
4 3 1 2
B55
OTC 7001
30 31 1 120 60 61 90 91
PROM 7711
20 14 21 13 29 5 30 1 4
1681
1 3
1
6
1680
B76
1651
4 3 1 2
B66
B67
1408
18 10 1 9
I6
V2
V1
HIP 7323
64 52 1 51 14 19 33 20 26 32
V10
V9
V22
V25 V24 V26
V30
V30 V29 V28
L13
B71
B73
1
80

SSB SIDE Z


F764
7730
E C B
DRAM 7719
26 25 50 1
FEM 7760
30 1 31 100 50 81 51 80
EAGLE 7720
156 105 157 104 208 53 1 52
7729
B C E
F763
F762
B E 7728 C
FM1 7714
100 76 1 75 25 51 26 50
SDRAM 7753
50 26 1 25
B60
PICNIC 7713
120 81 121 80 160 41 1 40
COLUMBUS 7752
DRAM 7007
1 42 21 22
7006
48 25 1 24
B52
B51
B54
6
3064
B53
L9
B63
B62
B58
B56
B57
F14
B64
L6
L7
L8
V7
F104
L5
L3
F17
V6
B65
L2
B61
B75
B74
L1
V21
V20
V19
V8
L12
7651
64 49 1 48 16 33 17 32
HOP 7301
33 24 34 22 44 12 2 11
F18
F20
F19
1409
18 10 1 9
B68
B72
B70
B77
80
1



▨ INDICATED ON SERVICE PRINTING

☐ NOT INDICATED ON SERVICE PRINTING

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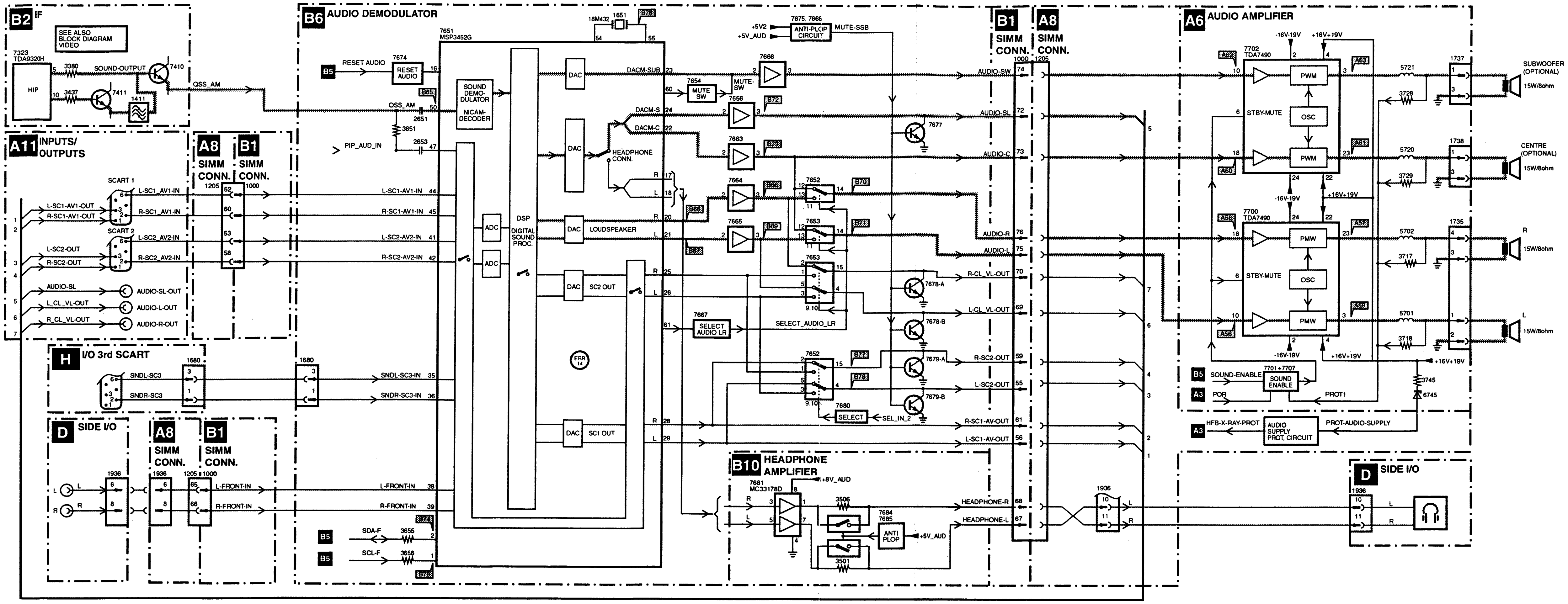
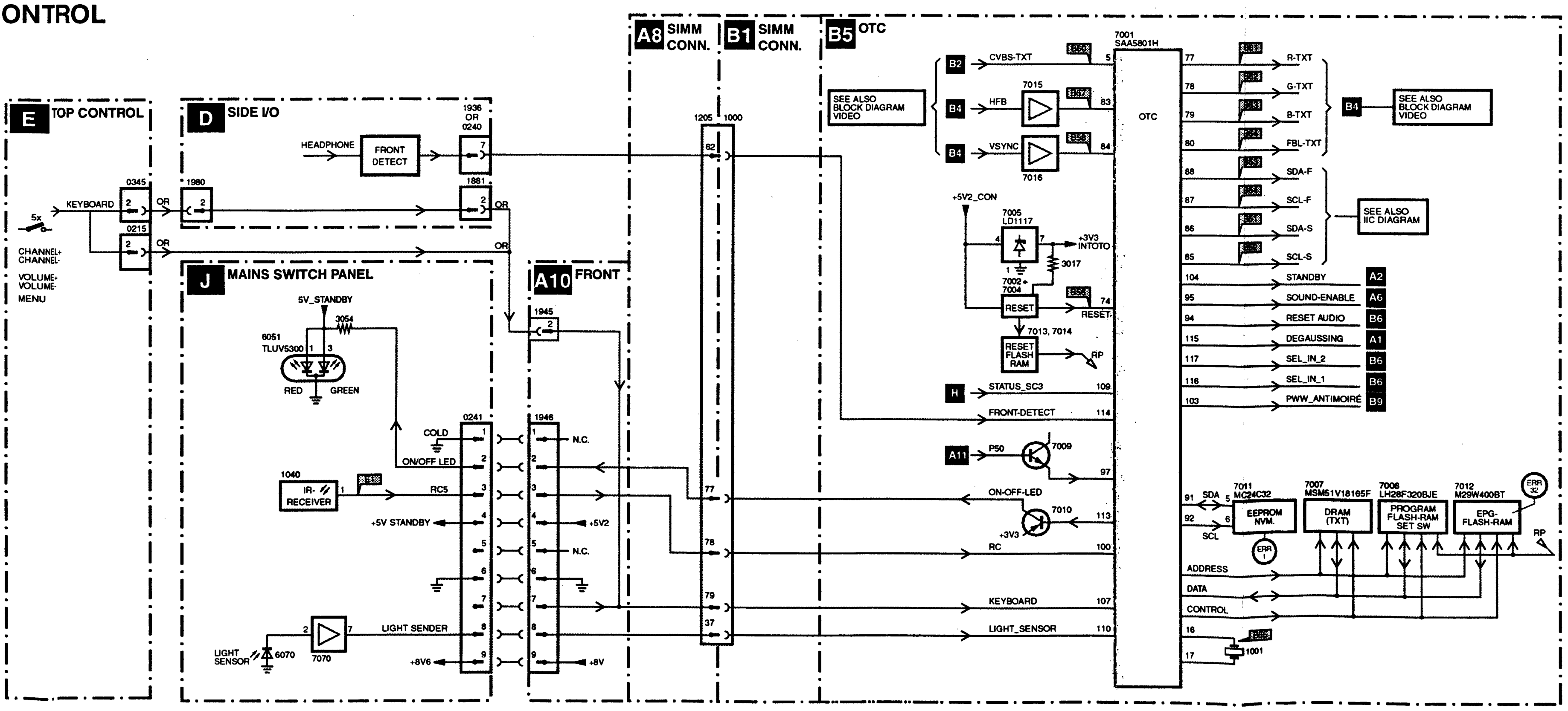
260304

Block Diagram Audio 1 (Exclusive Wireless Audio Details)

AUDIO

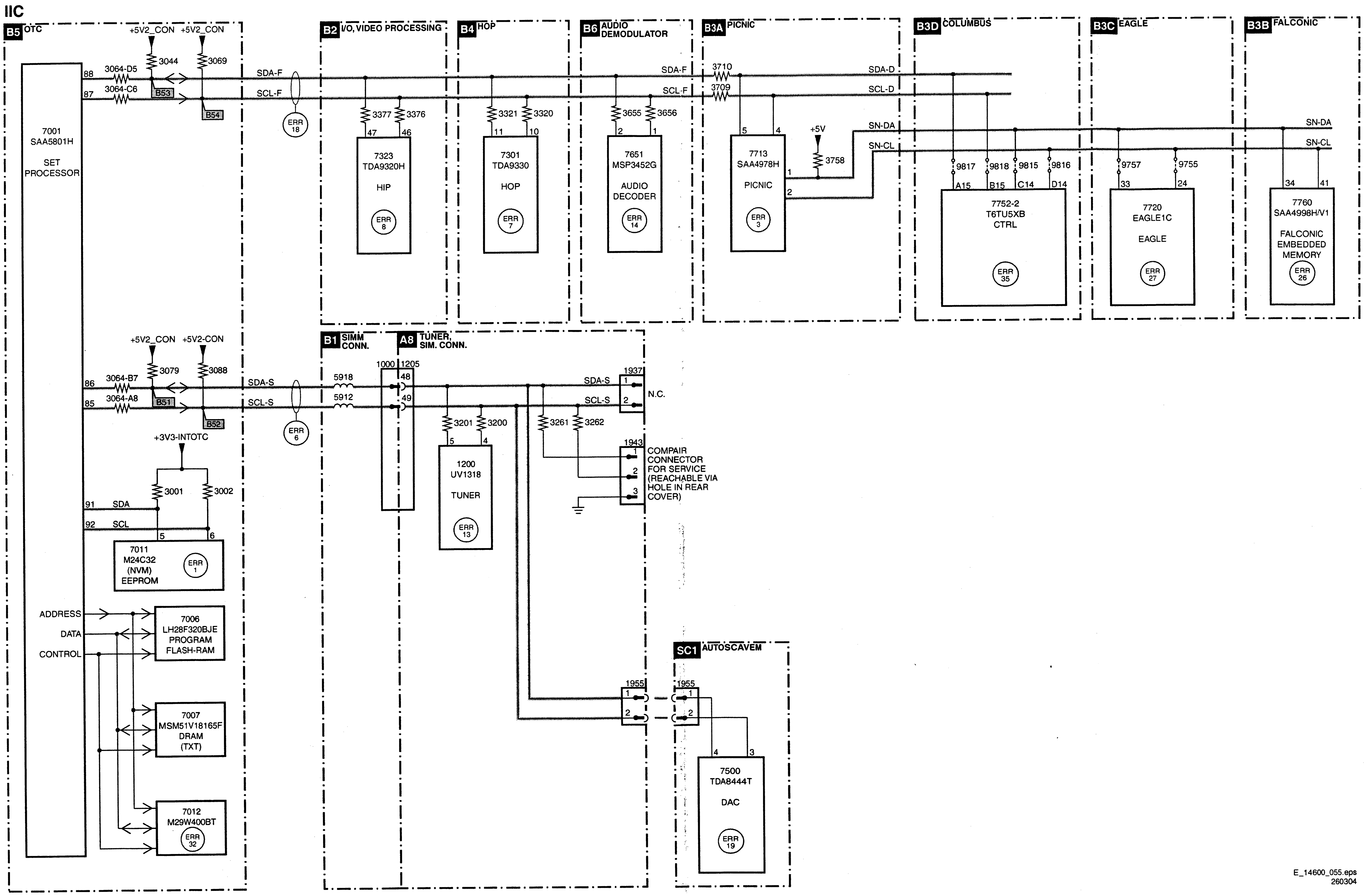

B2 IF
SEE ALSO BLOCK DIAGRAM VIDEO
7323 TDA9320H
HIP
SOUND-OUTPUT
QSS_AM
A11 INPUTS/ OUTPUTS
SCART 1
SCART 2
L-SC1_AV1-IN
R-SC1_AV1-IN
L-SC2_AV2-IN
R-SC2_AV2-IN
L-SC1-AV1-OUT
R-SC1-AV1-OUT
L-SC2-OUT
R-SC2-OUT
AUDIO-SL
L_CL_VL-OUT
R_CL_VL-OUT
AUDIO-SL-OUT
AUDIO-L-OUT
AUDIO-R-OUT
A8 SIMM CONN.
B1 SIMM CONN.
H I/O 3rd SCART
SNDL-SC3
SNDR-SC3
D SIDE I/O
L-FRONT-IN
R-FRONT-IN
B6 AUDIO DEMODULATOR
7651 MSP3452G
RESET AUDIO
SOUND DEMODULATOR
NICAM-DECODER
PIP_AUD_IN
ADC
DSP DIGITAL SOUND PROC.
DAC
DACM-SUB
DACM-S
DACM-C
HEADPHONE CONN.
LOUDSPEAKER
SC2 OUT
SC1 OUT
SELECT AUDIO LR
SELECT_AUDIO_LR
SDA-F
SCL-F
ANTI-PLOP CIRCUIT
MUTE-SSB
MUTE SW
SEL_IN_2
AUDIO-SW
AUDIO-SL
AUDIO-C
AUDIO-R
AUDIO-L
R-CL_VL-OUT
L-CL_VL-OUT
R-SC2-OUT
L-SC2-OUT
R-SC1-AV-OUT
L-SC1-AV-OUT
B10 HEADPHONE AMPLIFIER
7681 MC33178D
HEADPHONE-R
HEADPHONE-L
ANTI PLOP
A6 AUDIO AMPLIFIER
7702 TDA7490
7700 TDA7490
PWM
OSC
STBY-MUTE
SOUND-ENABLE
POR
PROT1
HFB-X-RAY-PROT
AUDIO SUPPLY PROT. CIRCUIT
PROT-AUDIO-SUPPLY
SUBWOOFER (OPTIONAL) 15W/8ohm
CENTRE (OPTIONAL) 15W/8ohm
R 15W/8ohm
L 15W/8ohm
D SIDE I/O

CONTROL


E TOP CONTROL
KEYBOARD
CHANNEL+
CHANNEL-
VOLUME+
VOLUME-
MENU
D SIDE I/O
HEADPHONE
FRONT DETECT
J MAINS SWITCH PANEL
5V_STANDBY
6051 TLUV5300
RED
GREEN
COLD
ON/OFF LED
IR-RECEIVER
RC5
+5V STANDBY
LIGHT SENSOR
LIGHT SENDER
+8V6
A10 FRONT
N.C.
+5V2
+8V
A8 SIMM CONN.
B1 SIMM CONN.
B5 OTC
7001 SAA5801H
OTC
SEE ALSO BLOCK DIAGRAM VIDEO
CVBS-TXT
HFB
VSYNC
7005 LD1117
RESET
RESET FLASH RAM
STATUS_SC3
FRONT-DETECT
P50
ON-OFF-LED
RC
KEYBOARD
LIGHT_SENSOR
R-TXT
G-TXT
B-TXT
FBL-TXT
SDA-F
SCL-F
SDA-S
SCL-S
SEE ALSO IIC DIAGRAM
STANDBY
SOUND-ENABLE
RESET AUDIO
DEGAUSSING
SEL_IN_2
SEL_IN_1
PWM_ANTIMOIRÉ
7011 M24C32 EEPROM NVM
7007 MSM51V18165F DRAM (TXT)
7008 LH28F320BJE PROGRAM FLASH-RAM SET SW
7012 M29W400BT EPG-FLASH-RAM
ADDRESS
DATA
CONTROL

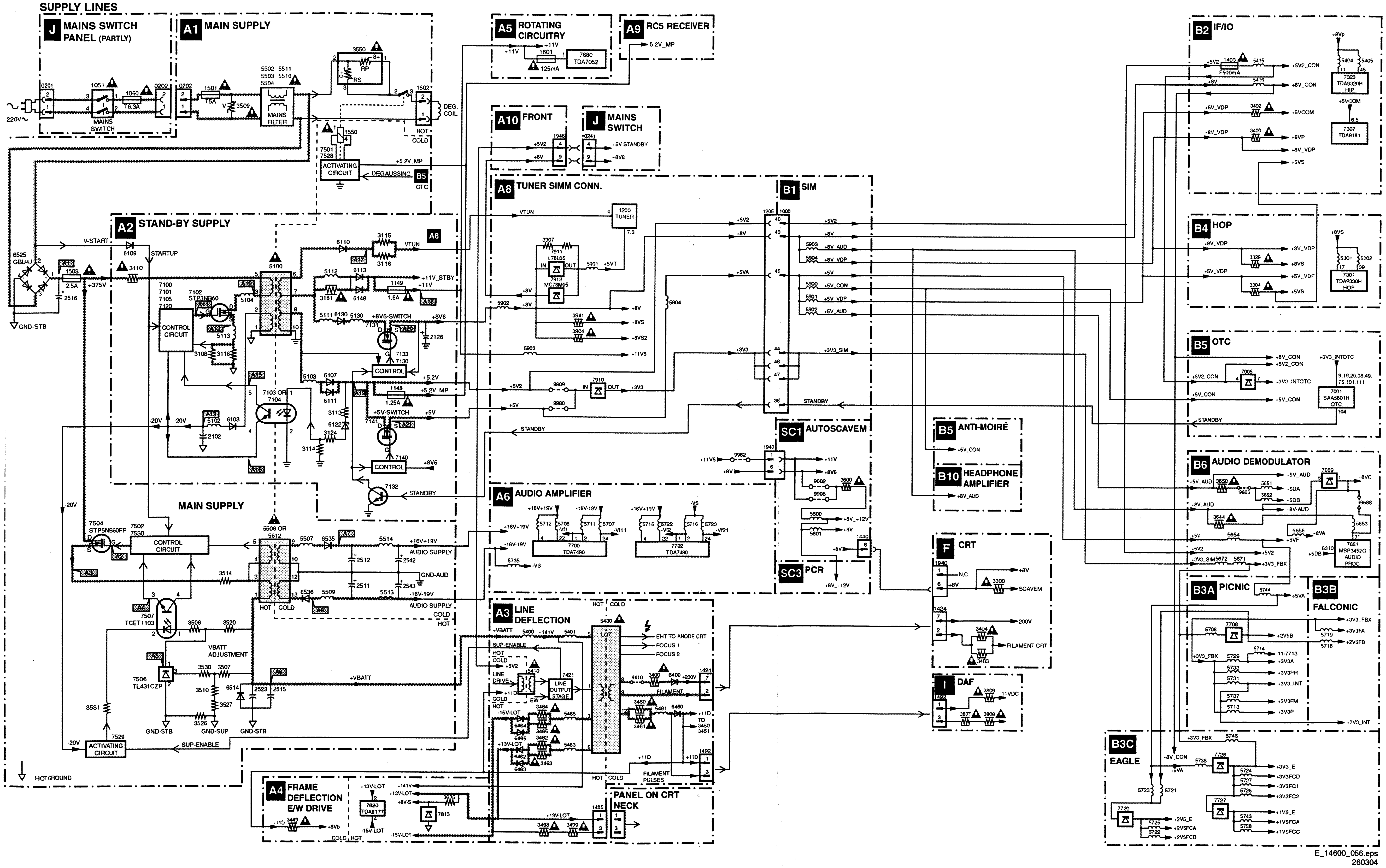
E_14600_053.eps
260304

I2C IC's overview


IIC
B5 OTC
+5V2_CON +5V2_CON
3044
3069
88
3064-D5
87
3064-C6
B53
B54
7001
SAA5801H
SET PROCESSOR
SDA-F
SCL-F
ERR 18
B2 I/O, VIDEO PROCESSING
3377 3376
47 46
7323
TDA9320H
HIP
ERR 8
B4 HOP
3321 3320
11 10
7301
TDA9330
HOP
ERR 7
B6 AUDIO DEMODULATOR
3655 3656
2 1
7651
MSP3452G
AUDIO DECODER
ERR 14
SDA-F
SCL-F
B3A PICNIC
3710
3709
SDA-D
SCL-D
5 4
+5V
3758
7713
SAA4978H
PICNIC
ERR 3
1
2
SN-DA
SN-CL
B3D COLUMBUS
9817 9818 9815 9816
A15 B15 C14 D14
7752-2
T6TU5XB
CTRL
ERR 35
B3C EAGLE
9757 9755
33 24
7720
EAGLE1C
EAGLE
ERR 27
B3B FALCONIC
SN-DA
SN-CL
34 41
7760
SAA4998H/V1
FALCONIC EMBEDDED MEMORY
ERR 26
+5V2_CON +5V2-CON
3079
3088
86
3064-B7
85
3064-A8
B51
B52
SDA-S
SCL-S
ERR 6
B1 SIMM CONN.
A8 TUNER, SIM. CONN.
5918
5912
1000 1205
48
49
SDA-S
SCL-S
1937
1
2
N.C.
3201 3200
5 4
1200
UV1318
TUNER
ERR 13
3261 3262
1943
1
2
3
COMPAIR CONNECTOR FOR SERVICE (REACHABLE VIA HOLE IN REAR COVER)
+3V3-INTOTC
3001
3002
91 SDA
92 SCL
5 6
7011
M24C32
(NVM)
EEPROM
ERR 1
ADDRESS
DATA
CONTROL
7006
LH28F320BJE
PROGRAM FLASH-RAM
7007
MSM51V18165F
DRAM
(TXT)
7012
M29W400BT
ERR 32
SC1 AUTOSCAVEM
1955
1
2
1955
1
2
4 3
7500
TDA8444T
DAC
ERR 19

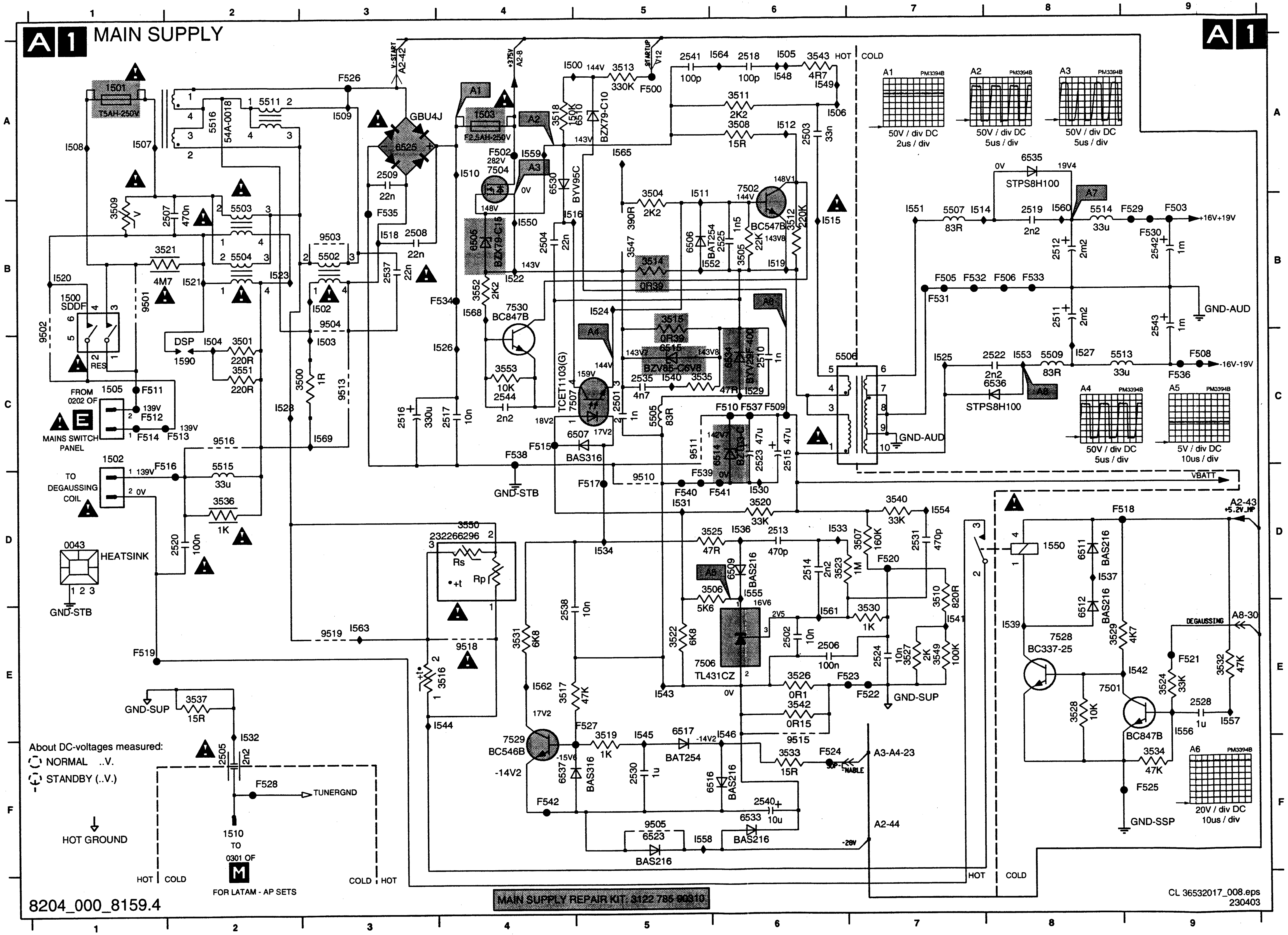
E_14600_055.eps
260304

Supply Lines Overview


SUPPLY LINES
J MAINS SWITCH PANEL (PARTLY)
A1 MAIN SUPPLY
A5 ROTATING CIRCUITRY
A9 RC5 RECEIVER
A10 FRONT
J MAINS SWITCH
A8 TUNER SIMM CONN.
B1 SIM
A2 STAND-BY SUPPLY
MAIN SUPPLY
A6 AUDIO AMPLIFIER
SC1 AUTOSCAVEM
SC3 PCR
A3 LINE DEFLECTION
A4 FRAME DEFLECTION E/W DRIVE
PANEL ON CRT NECK
B2 IF/IO
B4 HOP
B5 OTC
B5 ANTI-MOIRÉ
B10 HEADPHONE AMPLIFIER
B6 AUDIO DEMODULATOR
F CRT
I DAF
B3A PICNIC
B3B FALCONIC
B3C EAGLE
220V~
MAINS SWITCH
MAINS FILTER
DEG. COIL
ACTIVATING CIRCUIT
DEGAUSSING
CONTROL CIRCUIT
STARTUP
V-START
GND-STB
HOT GROUND
VBATT ADJUSTMENT
SUP-ENABLE
EHT TO ANODE CRT
FOCUS 1
FOCUS 2
FILAMENT
FILAMENT PULSES
STANDBY
HOT
COLD
E_14600_056.eps
260304

7. Circuit Diagrams and PWB Layouts

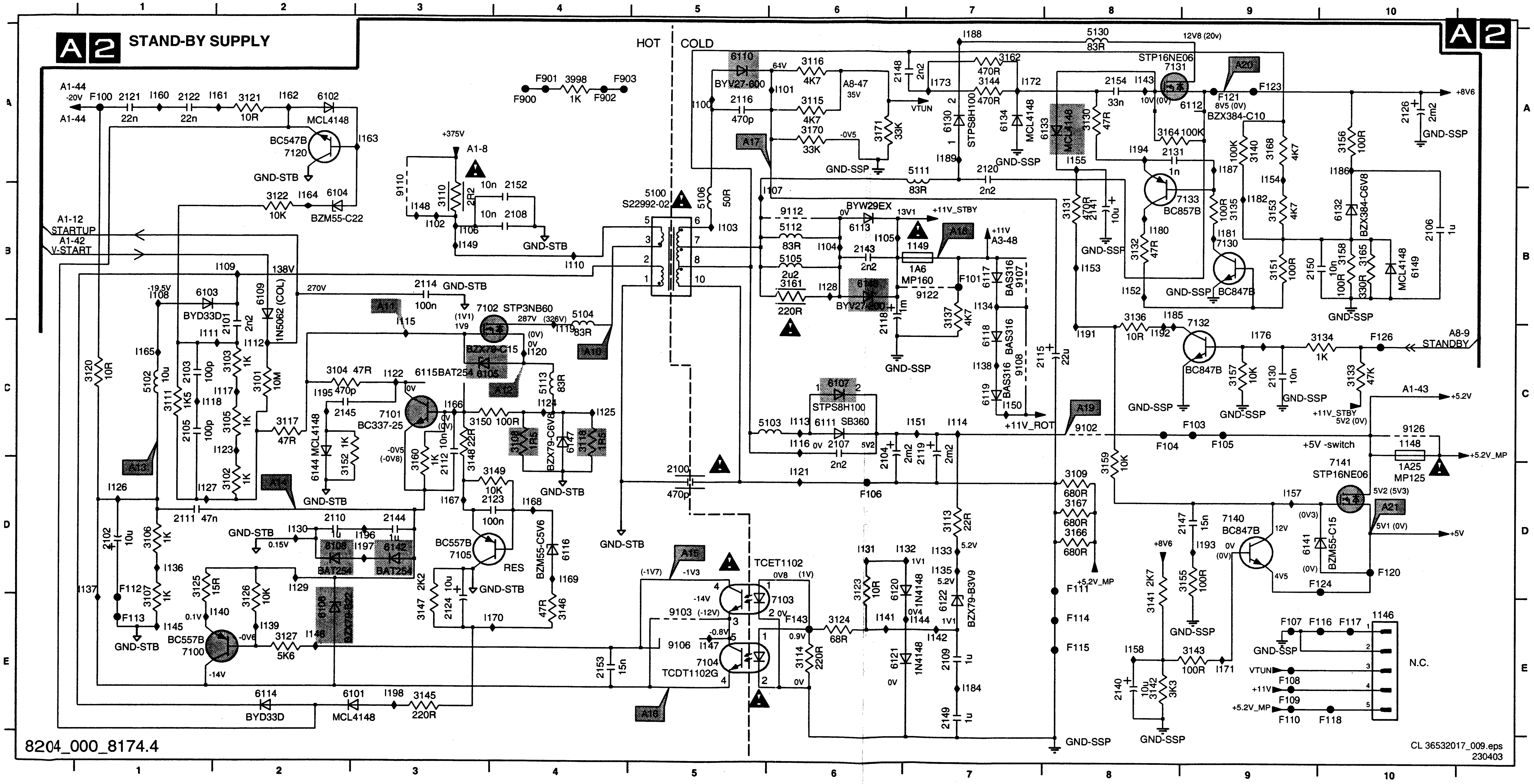
Large Signal Panel: Main Supply


A1 MAIN SUPPLY
1501 T5AH-250V
1503 F2.5AH-250V
GBU4J
5511
5516 54A-0018
5502
5503
5504
1500 SDDF
RES
FROM 0202 OF
E
MAINS SWITCH PANEL
TO DEGAUSSING COIL
0043 HEATSINK
GND-STB
3550 232266296
Rs
Rp
7530 BC847B
7502 BC547B
7504
TCET1103(G) 7507
BZX79-C10
BYV95C
BZV85-C6V8
BAS316
BAT254
5506
STPS8H100
GND-AUD
+16V+19V
-16V-19V
VBATT
7506 TL431CZ
7529 BC546B
7528 BC337-25
7501 BC847B
1550
DEGAUSSING
GND-SUP
GND-SSP
A3-A4-23
A2-44
TUNERGND
1510 TO 0301 OF
M
FOR LATAM - AP SETS
About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)
HOT GROUND
HOT COLD
COLD HOT
A1 50V / div DC 2us / div
A2 50V / div DC 5us / div
A3 50V / div DC 5us / div
A4 50V / div DC 5us / div
A5 5V / div DC 10us / div
A6 20V / div DC 10us / div
MAIN SUPPLY REPAIR KIT: 3122 785 90310
8204_000_8159.4
CL 36532017_008.eps 230403

0043	D1
1500	B1
1501	A1
1502	C1
1503	A4
1505	C1
1510	F2
1550	D8
1590	C2
2501	C5
2502	E6
2503	A6
2504	B4
2505	F2
2506	E6
2507	B2
2508	B3
2509	A3
2510	C6
2511	B8
2512	B8
2513	D6
2514	D6
2515	C6
2516	C3
2517	C4
2518	A6
2519	B8
2520	D2
2522	C8
2523	C6
2524	E7
2525	B6
2528	E9
2530	F5
2531	D7
2535	C5
2537	B3
2538	E4
2540	F6
2541	A5
2542	B9
2543	B9
2544	C4
3500	C3
3501	C2
3504	B5
3505	B6
3506	D6
3507	D7
3508	A6
3509	B1
3510	D7
3511	A6
3512	B6
3513	A5
3514	B5
3515	B5
3516	E4
3517	E4
3518	A4
3519	F5
3520	D6
3521	B2
3522	E5
3523	D6
3524	E9
3525	D6
3526	E6
3527	E7
3528	E8
3529	E8
3530	E7
3531	E4
3532	E9
3533	F6
3534	F9
3535	C5
3536	D2
3537	E2
3540	D7
3542	E6
3543	A6
3547	B5
3549	E7
3550	D4
3551	C2
3552	B4
3553	C4
5502	B3
5503	B2
5504	B2
5505	C5
5506	C6
5507	B7
5509	C8
5511	A2
5513	C9
5514	B8
5515	C2
5516	A2
6505	B4
6506	B5
6507	C5
6509	D6
6510	A5
6511	D8
6512	E8
6514	C6
6515	C5
6516	F6
6517	E5
6523	F5
6525	A3
6530	A4
6533	F6
6534	C6
6535	A8
6536	C8
6537	F4
7501	E8
7502	A6
7504	A4
7506	E5
7507	C5
7528	E8
7529	F4
7530	B4
9501	B1
9502	B1
9503	B3
9504	B3
9505	F5
9510	D5
9511	C5
9513	C3
9515	F6
9516	C2
9518	E4
9519	E3
F500	A5
F502	A4
F503	B9
F505	B7
F506	B8
F508	C9
F509	C6
F510	C6
F511	C1
F512	C1
F513	C2
F514	C1
F515	C4
F516	C2
F517	D5
F518	D9
F519	E1
F520	D7
F521	E9
F522	E7
F523	E7
F524	F6
F525	F9
F526	A3
F527	E5
F528	F2
F529	B9
F530	B9
F531	B7
F532	B7
F533	B8
F534	B4
F535	B3
F536	C9
F537	C6
F538	C4
F539	D5
F540	D5
F541	D6
F542	F4
I500	A5
I502	B3
I503	C3
I504	C2
I505	A6
I506	A6
I507	A1
I508	A1
I509	A3
I510	A4
I511	A5
I512	A6
I514	B7
I515	B6
I516	B5
I518	B3
I519	B6
I520	B1
I521	B2
I522	B4
I523	B2
I524	B5
I525	C7
I526	C4
I527	C8
I528	C2
I529	C6
I530	D6
I531	D5
I532	E2
I533	D6
I534	D5
I536	D6
I537	D8
I539	E8
I540	C5
I541	E7
I542	E9
I543	E5
I544	E4
I545	E5
I546	E6
I548	A6
I549	A6
I550	B4
I551	B7
I552	B6
I553	C8
I554	D7
I555	D6
I556	E9
I557	E9
I558	F5
I559	A4
I560	B8
I561	E6
I562	E4
I563	E3
I564	A6
I565	A5
I568	B4
I569	C3

Large Signal Panel: Stand-by Supply

1146 E10
1148 C10
1149 B7
2100 D5
2101 C2
2102 D1
2103 C1
2104 C6
2105 C1
2106 B10
2107 C6
2108 B4
2109 E7
2110 D2
2111 D1
2112 D3
2114 B3
2115 C8
2116 A5
2118 C6
2119 C7
2120 A7
2121 A1
2122 A1
2123 D4
2124 E3
2126 A10
2130 C9
2131 A8
2140 E8
2141 B8
2143 B6
2144 D3
2145 C2
2147 D9
2148 A6
2149 E7
2150 B9
2152 A4
2153 E4
2154 A8
3101 C2
3102 D2
3103 C2
3104 C2
3105 C2
3106 D1
3107 E1
3108 C4
3109 D8
3110 B3
3111 C1
3113 D7
3114 E6
3115 A6
3116 A6
3117 C2
3118 C4
3120 C1
3121 A2
3122 B2
3123 D6
3124 E6
3125 D1
3126 E2
3127 E2
3130 A8
3131 B8
3132 B8
3133 C10
3134 C10
3135 B9
3136 B8
3137 B7
3140 A9
3141 E8
3142 E8
3143 E9
3144 A7
3145 E3
3146 E4
3147 E3
3148 D3
3149 D4
3150 C3
3151 B9
3152 D2
3153 B9
3155 D9
3156 A10
3157 C9
3158 B10
3159 D8
3160 D3
3161 B6
3162 A7
3164 A8
3165 B10
3166 D8
3167 D8
3168 A9
3170 A6
3171 A6
3998 A4
5100 B5
5102 C1
5103 C6
5104 B4
5105 B6
5106 B5
5111 A7
5112 B6
5113 C4
5130 A8
6101 E3
6102 A2
6103 B1
6104 B2
6105 C3
6106 E2
6107 C6
6108 D2
6109 B2
6110 A5
6111 C6
6112 A9
6113 B6
6114 E2
6115 C3
6116 D4
6117 B7
6118 C7
6119 C7
6120 D6
6121 E6
6122 E7
6130 A7
6132 B10
6133 A7
6134 A7
6141 D9
6142 D3
6144 D2
6147 C4
6148 B6
6149 B10
7100 E1
7101 C3
7102 B3
7103 E6
7104 E5
7105 D3
7120 A2
7130 B9
7131 A8
7132 C9
7133 B9
7140 D9
7141 D10
9102 C8
9103 E5
9106 E5
9107 B7
9108 C7
9110 B3
9112 B6
9122 B7
9126 C10
F100 A1
F101 B7
F103 C9
F104 C8
F105 C9
F106 D6
F107 E9
F108 E9
F109 E9
F110 E9
F111 D8
F112 D1
F113 E1
F114 E8
F115 E8
F116 E10
F117 E10
F118 E10
F120 D10
F121 A9
F123 A9
F124 D10
F126 C10
F143 E6
F900 A4
F901 A4
F902 A4
F903 A4
I100 A5
I101 A6
I102 B3
I103 B5
I104 B6
I105 B6
I106 B3
I107 B6
I108 B1
I109 B2
I110 B4
I111 C1
I112 C2
I113 C6
I114 C7
I115 C3
I116 C6
I117 C2
I118 C1
I119 C4
I120 C4
I121 D6
I122 C3
I123 C2
I124 C4
I125 C4
I126 D1
I127 D1
I128 B6
I129 D2
I130 D2
I131 D6
I132 D7
I133 D7
I134 B7
I135 D7
I136 D1
I137 D1
I138 C7
I139 E2
I140 E2
I141 E6
I142 E7
I143 A8
I144 E7
I145 E1
I146 E2
I147 E5
I148 B3
I149 B3
I150 C7
I151 C7
I152 B8
I153 B8
I154 A9
I155 A8
I157 D9
I158 E8
I160 A1
I161 A2
I162 A2
I163 A3
I164 B2
I165 C1
I166 C3
I167 D3
I168 D4
I169 D4
I170 E4
I171 E9
I172 A7
I173 A7
I176 C9
I180 B8
I181 B9
I182 B9
I184 E7
I185 B8
I186 A10
I187 A9
I188 A7
I189 A7
I191 C8
I192 C8
I193 D9
I194 A8
I195 C2
I196 D3
I197 D3
I198 E3

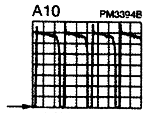

A2 STAND-BY SUPPLY
HOT
COLD
A1-44
-20V
A1-12 STARTUP
A1-42 V-START
BC547B 7120
BYD33D
1N5062 (COL)
BC337-25 7101
STP3NB60 7102
BZX79-C15
BZX79-C6V8
BC557B 7105
RES
BZM55-C5V6
BC557B 7100
BYD33D 6114
MCL4148 6101
5100 S22992-02
BYV27-600 6110
BYW29EX
STPS8H100
SB360 6111
1A6 MP160
TCET1102 7103
TCDT1102G 7104
STP16NE06 7131
BZX384-C10
BC857B 7133
BC847B 7130
BC847B 7132
A8-9 STANDBY
+8V6
+5.2V
+5.2V_MP
+5V
+11V_STBY
+11V_ROT
+5V -switch
STP16NE06 7141
1A25 MP125
BC847B 7140
BZM55-C15
BZX79-B3V9
BZX384-C6V8
GND-STB
GND-SSP
1146
N.C.
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
A21
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E

8204_000_8174.4

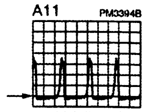
CL 36532017_009.eps
230403

About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)

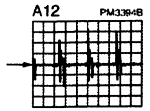
STANDBY SUPPLY REPAIR KIT: 3122 785 90460

A10


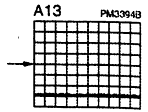
50V / div DC
5us / div

A11


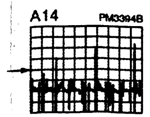
5V / div DC
5us / div

A12


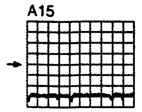
2V / div DC
5us / div

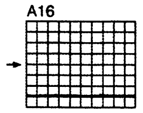
A13


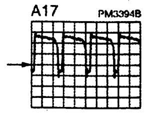
5V / div DC
10us / div

A14


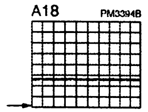
200mV / div DC
10us / div

A15

500mV / div DC
5ms / div

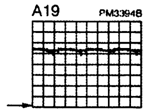
A16

5V / div DC
5ms / div

A17


20V / div DC
5us / div

A18


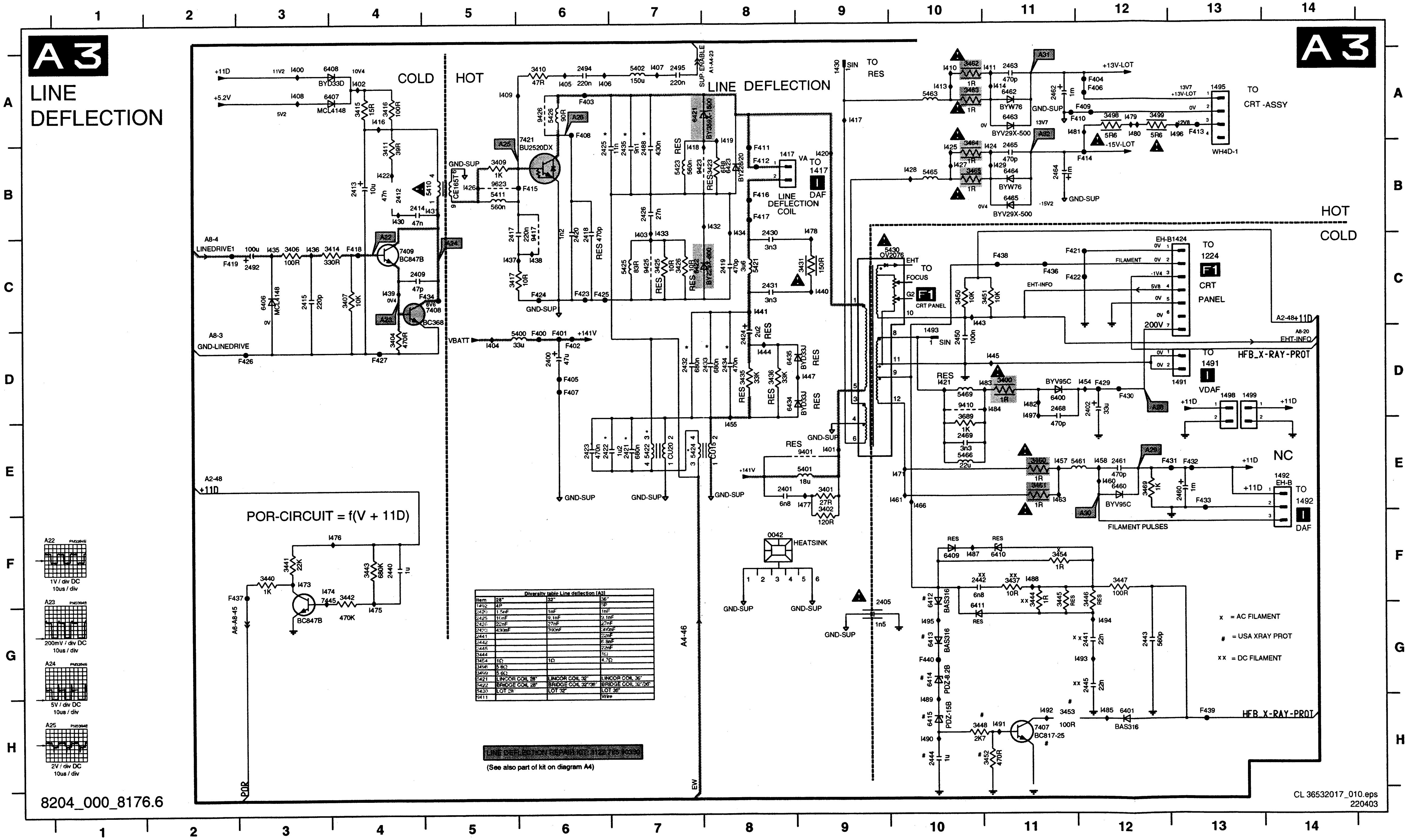
5V / div DC
5us / div

A19


1V / div DC
5us / div

Large Signal Panel: Line Deflection

0042 F8
1417 B8
1424 C13
1430 A9
1491 D13
1492 E14
1493 D10
1495 A13
1498 D13
1499 D13
2400 D6
2401 E8
2402 D12
2405 G9
2409 C4
2412 B4
2413 B4
2414 B4
2415 C3
2417 B5
2418 B6
2419 C8
2420 B6
2421 E7
2422 E6
2423 E6
2424 D8
2425 B6
2426 B7
2430 B8
2431 C8
2432 D7
2433 D8
2434 D8
2435 B7
2440 F4
2441 G12
2442 F10
2443 G12
2444 H10
2445 G12
2450 D10
2460 E13
2461 E12
2462 A11
2463 A11
2464 B11
2465 B11
2468 D11
2469 E10
2488 B7
2492 C3
2494 A6
2495 A7
3400 D11
3401 E9
3402 F9
3404 D4
3406 C3
3407 C4
3409 B5
3410 A6
3411 B4
3414 C4
3415 A4
3416 A4
3417 C5
3423 B8
3425 C7
3426 C7
3431 C9
3435 D8
3436 D8
3437 F11
3440 F3
3441 F3
3442 F4
3443 F4
3444 F11
3445 F11
3446 F12
3447 F12
3448 H10
3450 C10
3451 C11
3452 H11
3453 H11
3454 F11
3460 E11
3461 E11
3462 A10
3463 A10
3464 B10
3465 B10
3469 E12
3498 A12
3499 A12
3689 E10
5400 D6
5401 E9
5402 A7
5410 B5
5411 B5
5421 C8
5422 E7
5423 B7
5424 E7
5425 C7
5426 A6
5430 C10
5461 E12
5463 A10
5465 B10
5466 E10
5469 D10
6400 D11
6401 H12
6406 C3
6407 A4
6408 A4
6409 F10
6410 F11
6411 G10
6412 F10
6413 G10
6414 G10
6415 H10
6421 A7
6422 C7
6423 B8
6434 D8
6435 D8
6460 E12
6462 A11
6463 A11
6464 B11
6465 B11
7407 H11
7408 C5
7409 C4
7421 A6
7445 F3
9401 E9
9410 D10
9417 B6
9423 B7
9425 C7
9426 A6
9623 B5
F400 D6
F401 D6
F402 D6
F403 A6
F404 A12
F405 D6
F406 A12
F407 D6
F408 A6
F409 A12
F410 A12
F411 B8
F412 B8
F413 A13
F414 B12
F415 B6
F416 B8
F417 B8
F418 C4
F419 C2
F421 C11
F422 C11
F423 C6
F424 C6
F425 C6
F426 D3
F427 D4
F429 D12
F430 D12
F431 E13
F432 E13
F433 E13
F434 C5
F436 C11
F437 F2
F438 C11
F439 H13
F440 G10
I400 A3
I401 E9
I402 A4
I403 B7
I404 D5
I405 A6
I406 A6
I407 A7
I408 A3
I409 A5
I410 A10
I411 A11
I413 A10
I414 A11
I416 A4
I417 A9
I418 B7
I419 A8
I420 B9
I421 D10
I422 B4
I424 B11
I425 B10
I426 B5
I427 B10
I428 B10
I429 B11
I430 B4
I431 B5
I432 B8
I433 B7
I434 B8
I435 C3
I436 C3
I437 C5
I438 C6
I439 C4
I440 C9
I441 C8
I443 C10
I444 D8
I445 D11
I447 D9
I454 D12
I455 E8
I457 E11
I458 E12
I460 E12
I461 E10
I463 E11
I466 E10
I471 E10
I473 F3
I474 F3
I475 G4
I476 F4
I477 E9
I478 B9
I479 A12
I480 A12
I481 A11
I482 D11
I483 D11
I484 D11
I485 H12
I487 F10
I488 F11
I489 H10
I490 H10
I491 H11
I492 H11
I493 G12
I494 G12
I495 G10
I496 A13
I497 D11


A3
LINE DEFLECTION
COLD
HOT
LINE DEFLECTION
BU2520DX
BC847B
BC368
LINEDRIVE1
GND-LINEDRIVE
VBATT
+141V
+11D
+5.2V
GND-SUP
LINE DEFLECTION COIL
TO 1417 DAF
TO RES
TO FOCUS
CRT PANEL
EHT
+13V-LOT
-15V-LOT
TO CRT-ASSY
WH4D-1
HOT
COLD
TO 1224 CRT PANEL
EHT-INFO
TO 1491 VDAF
HFB_X-RAY-PROT
NC
TO 1492 DAF
FILAMENT PULSES
HEATSINK
POR-CIRCUIT = f(V + 11D)
BC817-25
x = AC FILAMENT
# = USA XRAY PROT
xx = DC FILAMENT
A22 1V / div DC 10us / div
A23 200mV / div DC 10us / div
A24 5V / div DC 10us / div
A25 2V / div DC 10us / div
8204_000_8176.6
CL 36532017_010.eps
220403

Diversity table Line deflection [A3]			
Item	28"	32"	36"
1492	4P		3P
2420	1.5nF	1nF	1nF
2425	10nF	9.1nF	9.1nF
2426	22nF	27nF	27nF
2488	430nF	390nF	360nF
2441			22nF
2442			6.8nF
2445			22nF
3444			1Ω
3454	1Ω	1Ω	4.7Ω
3498	5.6Ω		
3499	5.6Ω		
5421	LINCOR COIL 28"	LINCOR COIL 32"	LINCOR COIL 36"
5422	BRIDGE COIL 28"	BRIDGE COIL 32"/36"	BRIDGE COIL 32"/36"
5430	LOT 28"	LOT 32"	LOT 36"
3411			Wire

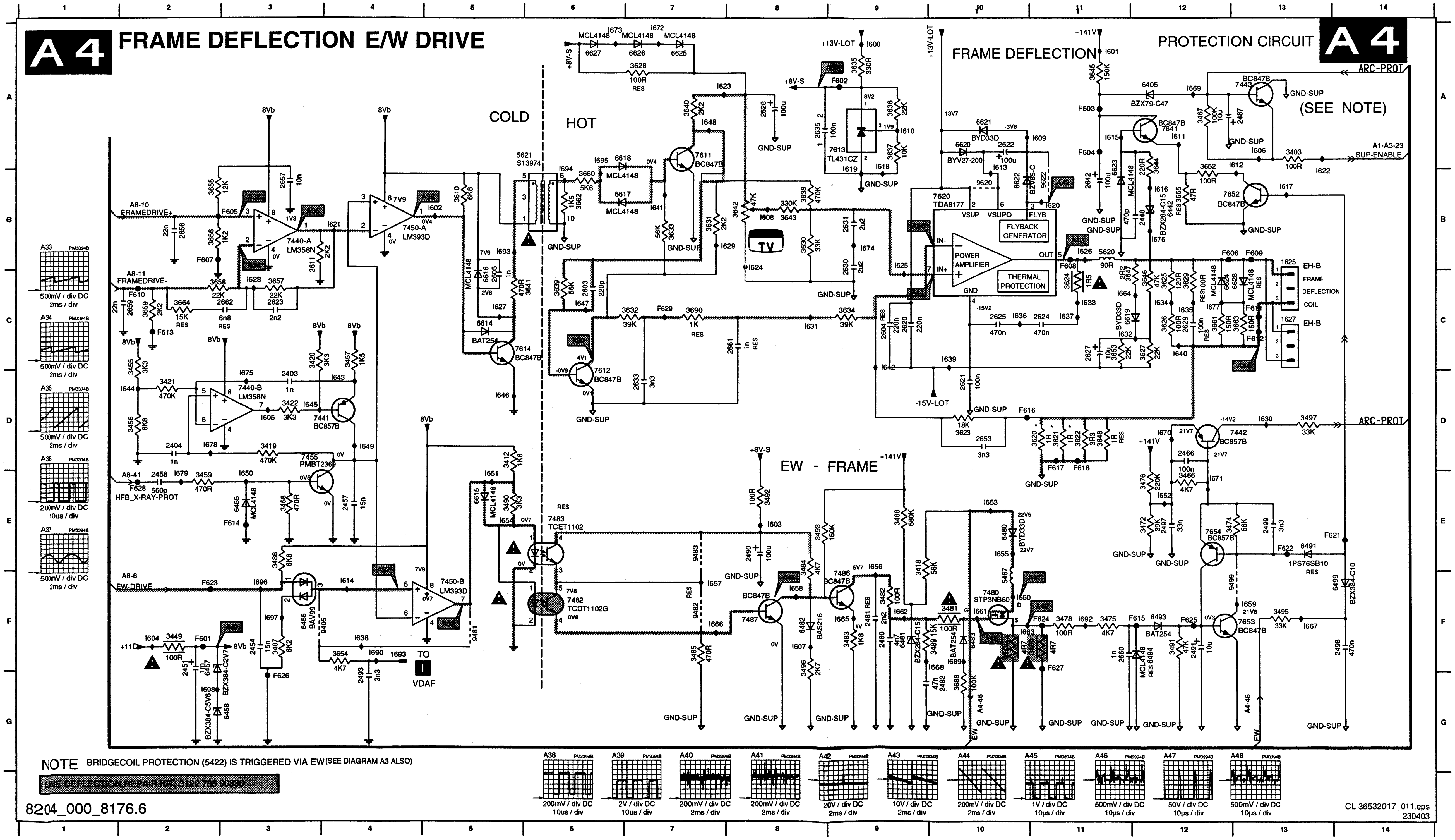
LINE DEFLECTION REPAIR KIT: 3122 785 90330

(See also part of kit on diagram A4)

Large Signal Panel: Frame Deflection E/W Drive

2480 F9
2481 F9
2631 B9
2451 F2
2454 F3
2457 E4
2458 E2
2466 D12
2653 D10
2656 B2
2657 B3
2659 C2
2660 F11
1627 C13
1693 F4
2403 D3
2404 D2
2448 B12
3478 F11
3482 F9
3483 F9
3484 E8
3485 F7
3486 E3
2482 G10
2487 A13
2490 E8
2491 F12
2493 G4
2497 E12
1625 B13
2627 C11
2628 A8
2629 C12
2630 B9
3629 C12
2633 D7
2635 A8
2642 B11
3633 B7
3634 C9
3635 A9
3636 A9
2661 C8
2662 C3
3403 A13
3412 D5
3418 E9
3419 D3
3472 E12
3474 E13
3475 F11
3476 E12
3661 C12
3479 F10
3480 F11
3481 F10
3665 B12
3688 G10
3690 C7
5467 F10
3487 F3
3488 E9
3489 F10
3490 E5
3491 F12
3492 E8
2498 F14
2499 E13
2603 C6
2604 C9
2605 C5
2620 C9
2621 D10
2622 A10
2623 C3
2624 C11
2625 C10
3625 C12
3626 C12
3627 C12
3628 A7
6619 C11
3630 B8
3631 B7
3632 C7
6623 A11
6624 C12
3637 A9
3638 B8
3639 C6
3640 A7
3641 C6
3642 B8
3420 C3
3421 D2
3422 D3
3449 F2
3455 C2
3456 D2
3457 C4
3458 E3
3459 E2
3466 E12
3467 A12
3657 C3
3658 C2
3659 C2
3660 B6
7620 B10
3662 B6
3663 C13
3664 C2
7654 E12
9405 F4
9481 F5
9482 F7
5620 B11
5621 A5
6405 A12
6442 B12
6455 E3
6456 F3
3493 E8
3495 F13
3496 F8
3497 D13
3610 B5
3611 B3
3620 D11
3621 D11
3622 D11
3623 D10
3624 C11
6615 E5
6616 C5
6617 B6
6618 A6
F618 D11
6620 A10
6621 A10
6622 B10
6625 A7
6626 A7
6627 A6
6628 C13
7440-A B3
7440-B D3
3643 B8
3644 A12
3645 A11
3646 C12
3647 C12
3648 D11
3652 A12
3653 C11
3654 F4
3655 B2
3656 B2
7611 A7
7612 D6
7613 A9
7614 C5
1615 A11
7641 A12
7652 B13
7653 F13
9483 E7
9499 F13
9620 B10
9622 B11
F601 F2
F602 A9
6457 F2
6458 G3
6480 E10
6481 F9
6482 F8
6483 F10
6491 E13
6493 F12
6494 F12
6499 F14
6614 C5
F614 E3
F615 F12
F616 D10
F617 D11
1640 C12
F621 E13
F622 E13
F623 F2
F624 F11
F625 F12
F626 G3
F627 F11
F628 E2
F629 C7
7441 D3
7442 D13
7443 A13
7450-A
B4
7450-B
F5
7455 D3
7480 F10
7482 F6
7483 E6
7486 F9
7487 F8
1611 A12
1612 A13
1613 A10
1614 F4
1658 F8
1616 B12
1617 B13
1618 A9
1662 F9
1663 F10
1664 C11
1665 F9
1666 F7
1619 A9
1620 B11
1621 B4
1622 B13
1623 A7
1624 B8
F603 A11
F604 A11
F605 B3
F606 B12
F607 B2
F608 B11
F609 B13
F610 C2
F611 C13
F612 C13
F613 C2
1636 C10
1637 C11
1638 F4
1639 C10
1698 G2
1641 B7
1642 C9
1643 D4
1600 A9
1601 A11
1602 B5
1603 E8
1604 F2
1605 D3
1606 A13
1607 F8
1608 B8
1609 A11
1610 A9
1654 E5
1655 E10
1656 E9
1657 F7
1659 F13
1660 F10
1661 F10
1667 F13
1668 F10
1669 A12
1670 D12
1671 E12
1672 A7
1625 B9
1626 B11
1627 C5
1628 C3
1629 B8
1630 D13
1631 C8
1632 C11
1633 C11
1634 C12
1635 C12
1694 A6
1695 A6
1696 F3
1697 F3
1673 A6
1674 B9
1675 D3
1676 B12
1677 C12
1678 D2
1679 E2
1689 F10
1690 F4
1692 F11
1693 B5
1644 D2
1645 D3
1646 D5
1647 C6
1648 A7
1649 D4
1650 E3
1651 E5
1652 E12
1653 E10

Diversity table Frame deflection [A4]			
Item	28"	32"	36"
1693			1P
2493			3.3nF
3480		6.8Ω	
3488	1MΩ	680kΩ	1MΩ
3621	1Ω	1.5Ω	1Ω
3622	1.5Ω	1.8Ω	1Ω
3625	120Ω	220Ω	56Ω
3626	100Ω	220Ω	56Ω
3654			4.7kΩ
3661		470Ω	120Ω
6499	BZX384-C10	PDZ9.1B	BZX384-C10
6624		BAS316	BAS316


A4
FRAME DEFLECTION E/W DRIVE
COLD
HOT
FRAME DEFLECTION
PROTECTION CIRCUIT
A4
(SEE NOTE)
ARC-PROT
A1-A3-23 SUP-ENABLE
A8-10 FRAMEDRIVE+
A8-11 FRAMEDRIVE-
A8-41 HFB_X-RAY-PROT
A8-6 EW-DRIVE
7440-A LM358N
7440-B LM358N
7450-A LM393D
7450-B LM393D
7441 BC857B
7455 PMBT2369
7614 BC847B
7612 BC847B
7611 BC847B
7613 TL431CZ
5621 S13974
7620 TDA8177
VSUP
VSUPO
FLYB
FLYBACK GENERATOR
POWER AMPLIFIER
THERMAL PROTECTION
GND
IN-
IN+
OUT
TV
EW - FRAME
7483 TCET1102
7482 TCDT1102G
7486 BC847B
7487 BC847B
7480 STP3NB60
7641 BC847B
7443 BC847B
7652 BC847B
7442 BC857B
7654 BC857B
7653 BC847B
1625 EH-B FRAME DEFLECTION COIL
1627 EH-B
+8V-S
+13V-LOT
+141V
-15V-LOT
8Vb
+11D
GND-SUP
TO VDAF
A4-46
EW
RES
A33 500mV / div DC 2ms / div
A34 500mV / div DC 2ms / div
A35 500mV / div DC 2ms / div
A36 200mV / div DC 10us / div
A37 500mV / div DC 2ms / div
A38 200mV / div DC 10us / div
A39 2V / div DC 10us / div
A40 200mV / div DC 2ms / div
A41 200mV / div DC 2ms / div
A42 20V / div DC 2ms / div
A43 10V / div DC 2ms / div
A44 200mV / div DC 2ms / div
A45 1V / div DC 10µs / div
A46 500mV / div DC 10µs / div
A47 50V / div DC 10µs / div
A48 500mV / div DC 10µs / div

NOTE BRIDGECOIL PROTECTION (5422) IS TRIGGERED VIA EW(SEE DIAGRAM A3 ALSO)

LINE DEFLECTION REPAIR KIT: 3122 785 90330

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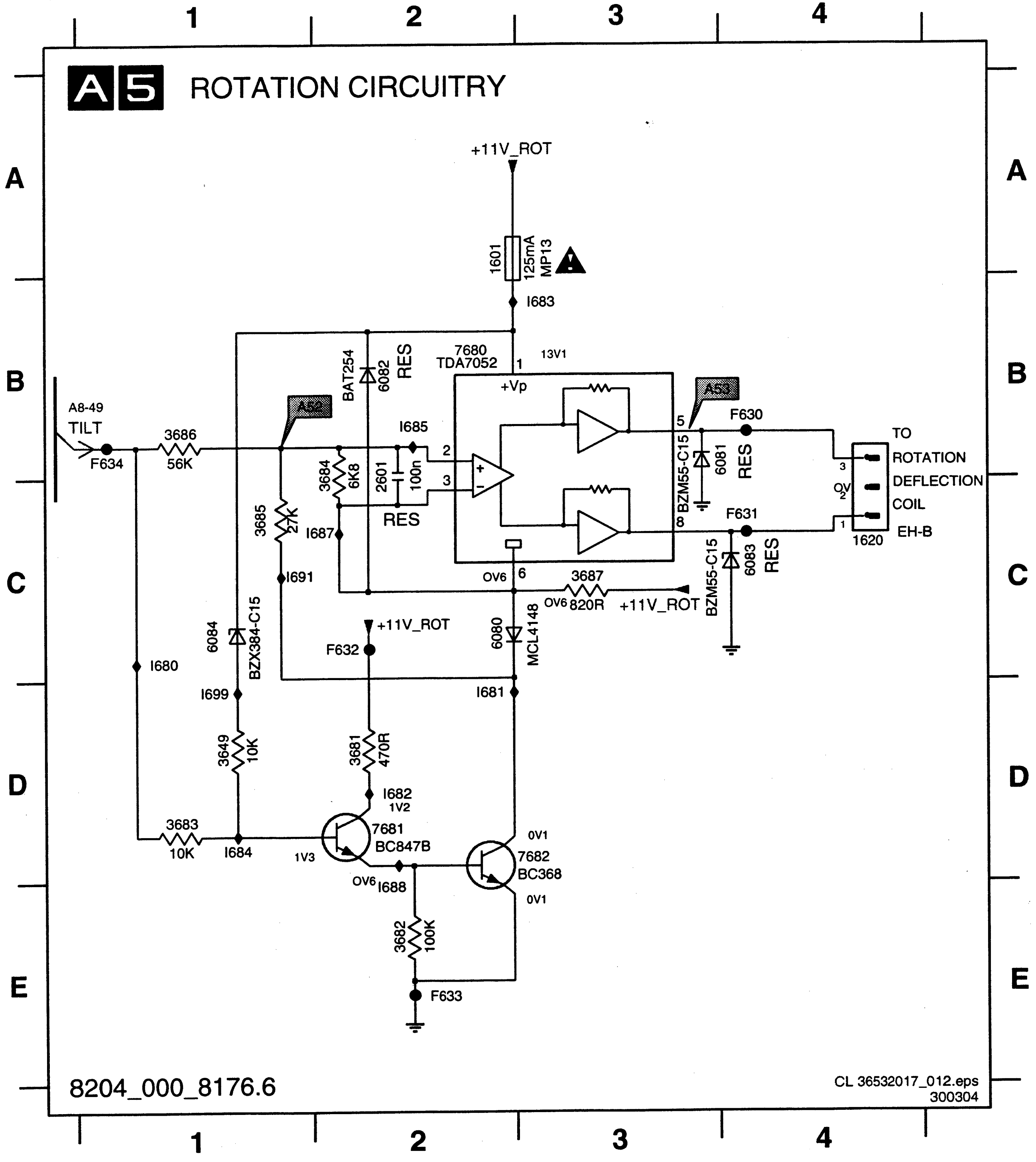
230403

Large Signal Panel: Rotation Circuitry

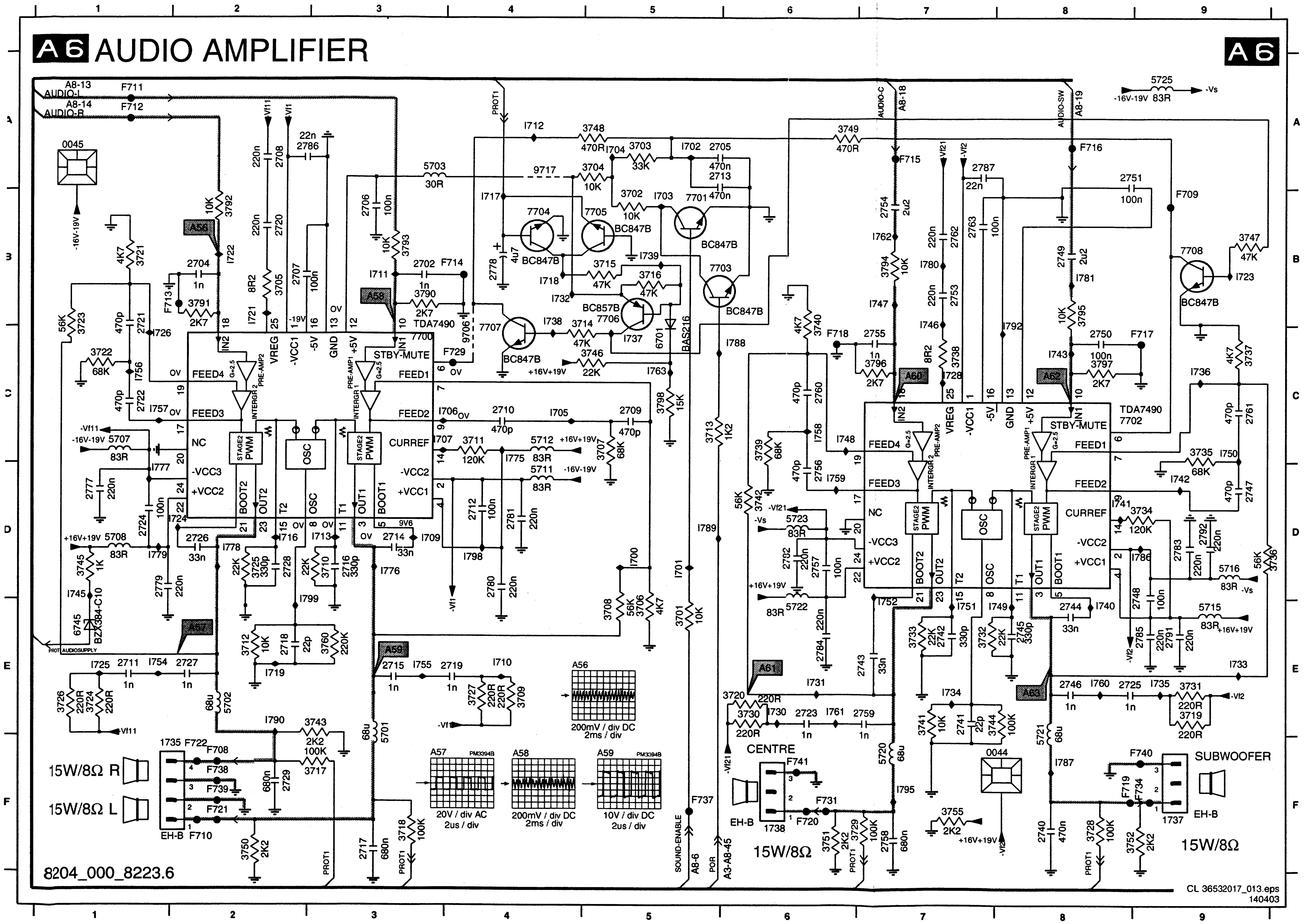
1601 A2
1620 C4
2601 B2
3649 D1
3681 D2
3682 E2
3683 D1
3684 B2
3685 C1
3686 B1
3687 C3
6080 C2
6081 B3
6082 B2
6083 C4
6084 C1
7680 B2
7681 D2
7682 D3
F630 B4
F631 C4
F632 C2
F633 E2
F634 B1
I680 C1
I681 D2
I682 D2
I683 B3
I684 D1
I685 B2
I687 C2
I688 E2
I691 C1
I699 D1



A5 ROTATION CIRCUITRY
1 2 3 4
A B C D E
+11V_ROT
1601
125mA
MP13
I683
7680
TDA7052
1
13V1
+Vp
BAT254
6082
RES
A8-49
TILT
F634
3686
56K
A52
I685
2
3
3684
6K8
2601
100n
RES
3685
27K
I687
I691
A53
5
F630
BZM55-C15
6081
RES
8
F631
6083
RES
BZM55-C15
TO
ROTATION
DEFLECTION
COIL
EH-B
3
0V
2
1
1620
0V6
6
3687
0V6 820R
+11V_ROT
6084
BZX384-C15
I680
I699
+11V_ROT
F632
6080
MCL4148
I681
3649
10K
3681
470R
I682
1V2
3683
10K
I684
1V3
7681
BC847B
0V6
I688
7682
BC368
0V1
0V1
3682
100K
F633
8204_000_8176.6
CL 36532017_012.eps
300304

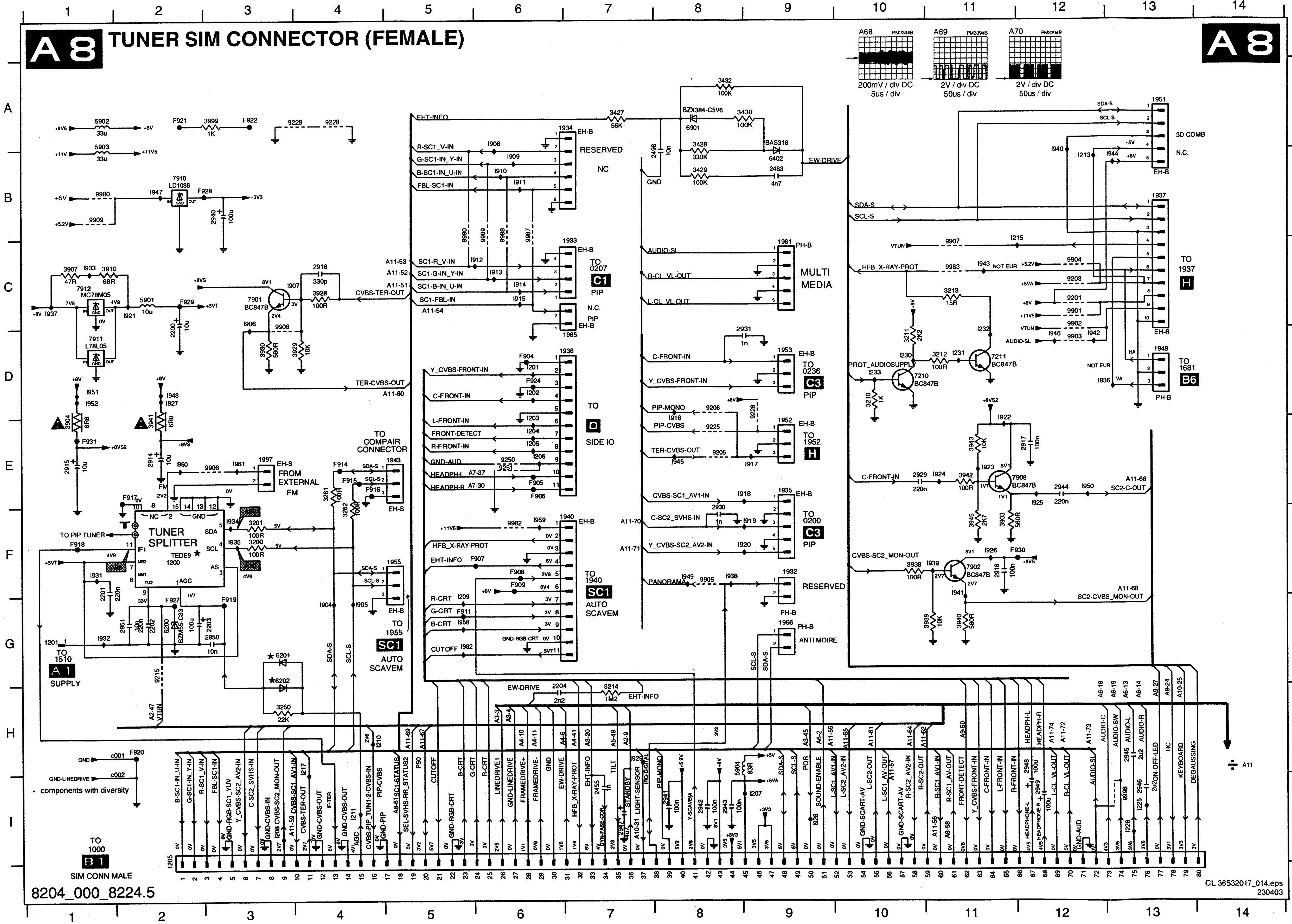
Personal Notes:

Large Signal Panel: Audio Amplifier


A6 AUDIO AMPLIFIER
A6
1 2 3 4 5 6 7 8 9
A B C D E F
A8-13 AUDIO-L F711
A8-14 AUDIO-R F712
0045
TDA7490 7700
TDA7490 7702
STBY-MUTE
FEED1
FEED2
FEED3
FEED4
CURREF
OSC
PWM
-VCC1
-VCC2
-VCC3
+VCC1
+VCC2
VREG
BOOT1
BOOT2
OUT1
OUT2
BC847B
BC857B
BAS216
BZX384-C10
AUDIO-C A8-18
AUDIO-SW A8-19
PROT1
SOUND-ENABLE A8-6
POR A3-A8-45
A56
A57
A58
A59
A60
A61
A62
A63
200mV / div DC 2ms / div
20V / div AC 2us / div
200mV / div DC 2ms / div
10V / div DC 2us / div
15W/8Ω R
15W/8Ω L
EH-B
CENTRE
15W/8Ω
SUBWOOFER
15W/8Ω
0044
8204_000_8223.6
CL 36532017_013.eps 140403

0044	F7
0045	A1
1735	F2
1737	F9
1738	F6
2702	B3
2704	B2
2705	A5
2706	B3
2707	B2
2708	A2
2709	C5
2710	C4
2711	E1
2712	D4
2713	A5
2714	D3
2715	E3
2716	D3
2717	F3
2718	E2
2719	E4
2720	B2
2721	B1
2722	C1
2723	E6
2724	D1
2725	E8
2726	D2
2727	E2
2728	D2
2729	F2
2740	F8
2741	E7
2742	E7
2743	E7
2744	E8
2745	E8
2746	E8
2747	D9
2748	D8
2749	B8
2750	C8
2751	A8
2753	B7
2754	B7
2755	C7
2756	D6
2757	D6
2758	F7
2759	E7
2760	C6
2761	C9
2762	B7
2763	B7
2777	D1
2778	B4
2779	D1
2780	D4
2781	D4
2782	D6
2783	D9
2784	E6
2785	E9
2786	A2
2787	A7
2791	E9
2792	D9
3701	E5
3702	B5
3703	A5
3704	A5
3705	B2
3706	E5
3707	C5
3708	E5
3709	E4
3710	D3
3711	C4
3712	E2
3713	C5
3714	C4
3715	B5
3716	B5
3717	F3
3718	F3
3719	E9
3720	E6
3721	B1
3722	C1
3723	B1
3724	E1
3725	D2
3726	E1
3727	E4
3728	F8
3729	F7
3730	E6
3731	E9
3732	E7
3733	E7
3734	D9
3735	C9
3736	D9
3737	C9
3738	C7
3739	C6
3740	B6
3741	E7
3742	D6
3743	E3
3744	E8
3745	D1
3746	C5
3747	B9
3748	A5
3749	A6
3750	F2
3751	F6
3752	F9
3755	F7
3760	E3
3790	B3
3791	B2
3792	B2
3793	B3
3794	B7
3795	B8
3796	C7
3797	C8
3798	C5
5701	E3
5702	E2
5703	A3
5707	C1
5708	D1
5711	D4
5712	C4
5715	E9
5716	D9
5720	F7
5721	E8
5722	E6
5723	D6
5725	A9
6701	C5
6745	E1
7700	C3
7701	B5
7702	C8
7703	B5
7704	B4
7705	B5
7706	B5
7707	C4
7708	B9
9706	C4
9717	A4
F708	F2
F709	B9
F710	F2
F711	A1
F712	A1
F713	B2
F714	B4
F715	A7
F716	A8
F717	C9
F718	C6
F719	F8
F720	F6
F721	F2
F722	F2
F729	C4
F731	F6
F734	F9
F737	F5
F738	F2
F739	F2
F740	F9
F741	F6
I700	D5
I701	D5
I702	A5
I703	B5
I704	A5
I705	C4
I706	C4
I707	C3
I709	D3
I710	E4
I711	B3
I712	A4
I713	D3
I716	D2
I717	B4
I718	B4
I719	E2
I721	B2
I722	B2
I723	B9
I724	D2
I725	E1
I726	C1
I728	C7
I730	E6
I731	E6
I732	B4
I733	E9
I734	E7
I735	E9
I736	C9
I737	C5
I738	B4
I739	B5
I740	E8
I741	D8
I742	D9
I743	C8
I745	D1
I746	B7
I747	B7
I748	C6
I749	E8
I750	C9
I751	E7
I752	E7
I754	E1
I755	E3
I756	C1
I757	C1
I758	C6
I759	D6
I760	E8
I761	E6
I762	B7
I763	C5
I775	C4
I776	D3
I777	D1
I778	D2
I779	D1
I780	B7
I781	B8
I786	D9
I787	F8
I788	C6
I789	D5
I790	E2
I792	B8
I795	F7
I798	D4
I799	E3

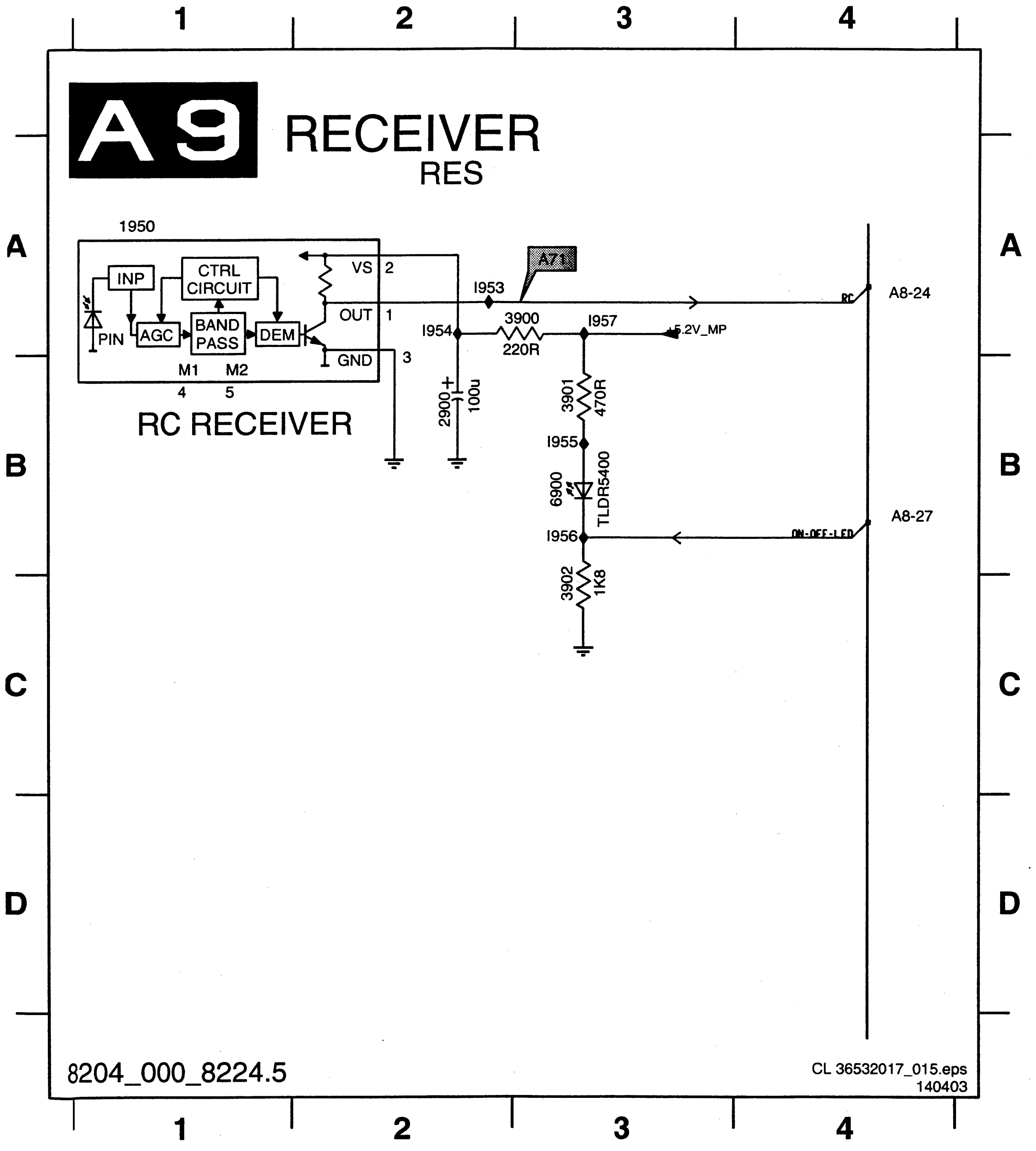
Large Signal Panel: Tuner SIM Connector (Female)


A8
TUNER SIM CONNECTOR (FEMALE)
A8
A68 PM3394B
200mV / div DC
5us / div
A69 PM3394B
2V / div DC
50us / div
A70 PM3394B
2V / div DC
50us / div
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I
5902 33u
5903 33u
+8V6
+8V
+11V
+11V5
F921
3999 1K
F922
9229
9228
7910 LD1086
+5V
9980
I947
F928
+3V3
+5.2V
9909
2940 100u
3907 47R
I933
3910 68R
7912 MC78M05
5901 10u
F929
+5VT
+8V I937
I921
2200 10u
7911 L78L05
7901 BC847B
I907
2916 330p
3928 100R
CVBS-TER-OUT
I906
9908
3930 560R
3929 10K
TER-CVBS-OUT
A11-60
3904 6R8
3941 6R8
I951
I952
I948
I927
F931
+8VS2
2915 10u
2914 10u
I960
9906
I961
1997 EH-S
FROM EXTERNAL FM
F917
TO PIP TUNER
F918
TUNER SPLITTER
TEDE9
1200
AGC
SDA
SCL
AS
I934
3201 100R
I935
3200 100R
I931
2201 220n
I932
F927
F919
2951
2202
6200 BZM55-C33
2203
2950 10n
1201
TO 1510
A1
SUPPLY
9215
A2-47 VTUN
F914
F915
F916
1943
TO COMPAIR CONNECTOR
EH-S
3261 100R
3262 100R
1955
EH-B
TO 1955
SC1
AUTO SCAVEM
I904
I905
SDA-S
SCL-S
6201
6202
3250 22K
EHT-INFO
R-SC1_V-IN
G-SC1-IN_Y-IN
B-SC1-IN_U-IN
FBL-SC1-IN
1934 EH-B
RESERVED
NC
I908
I909
I910
I911
9990
9989
9988
9987
A11-53
A11-52
A11-51
A11-54
SC1-R_V-IN
SC1-G-IN_Y-IN
SC1-B-IN_U-IN
SC1-FBL-IN
1933 EH-B
TO 0207
C1
PIP
N.C.
PIP
1965 EH-B
Y_CVBS-FRONT-IN
C-FRONT-IN
L-FRONT-IN
FRONT-DETECT
R-FRONT-IN
GND-AUD
HEADPH-L A7-37
HEADPH-R A7-30
1936
TO
O
SIDE IO
F904
F924
F905
F906
9250
9251
+11V5
9982
I959
1940 EH-B
HFB_X-RAY-PROT
EHT-INFO F907
F908
F909
R-CRT
G-CRT
B-CRT
CUTOFF
TO 1940
SC1
AUTO SCAVEM
3427 56K
3432 100K
BZX384-C5V6
6901
3430 100K
3428 330K
BAS316
6402
3429 100K
2483 4n7
2496 10n
GND
EW-DRIVE
1961 PH-B
AUDIO-SL
R-CL_VL-OUT
L-CL_VL-OUT
MULTI MEDIA
2931 1n
1953 EH-B
TO 0236
C3
PIP
PIP-MONO
9206
I916
PIP-CVBS
9225
9226
TER-CVBS-OUT
9205
I945
I917
1952 EH-B
TO 1952
H
CVBS-SC1_AV1-IN
I918
C-SC2_SVHS-IN
2930 1n
I919
Y_CVBS-SC2_AV2-IN
I920
1935 EH-B
TO 0200
C3
PIP
A11-70
A11-71
PANORAMA
I949
9905
I938
1932
RESERVED
1966 PH-B
ANTI MOIRE
1951
SDA-S
SCL-S
3D COMB
N.C.
EH-B
I940
I213
I944
1937
VTUN
9907
I215
HFB_X-RAY-PROT
9983
I943 NOT EUR
9904
9203
9201
9901
9902
I946
9903
I942
AUDIO-SL
TO 1937
H
3213 15R
3211 2K2
I230
3212 100R
I231
I232
7211 BC847B
PROT_AUDIOSUPPLY
I233
7210 BC847B
3210 1K
1948
TO 1681
B6
NOT EUR
I936
PH-B
I922
3943 10K
2917 100n
C-FRONT-IN
2929 220n
I924
3942 100R
I923
7908 BC847B
2944 220n
I950
A11-66
SC2-C-OUT
I925
3945 2K7
3903 560R
CVBS-SC2_MON-OUT
3938 100R
I939
7902 BC847B
I926
F930
2918 100n
I941
3939 10K
3940 560R
A11-68
SC2-CVBS_MON-OUT
EW-DRIVE
2204 2n2
3214 1M2
EHT-INFO
GND c001 F920
GND-LINEDRIVE c002
• components with diversity
TO 1000
B1
SIM CONN MALE
1205
B-SC1-IN_U-IN
G-SC1-IN_Y-IN
R-SC1_V-IN
FBL-SC1-IN
GND-RGB-SC1_YUV
Y_CVBS-SC2_AV2-IN
C-SC2_SVHS-IN
GND-CVBS-IN
CVBS-SC2_MON-OUT
CVBS-SC1_AV1-IN
CVBS-TER-OUT
GND-CVBS-OUT
IF-TER
GND-CVBS-OUT
AGC
CVBS-PIP_TUN1-2-CVBS-IN
PIP-CVBS
GND-PIP
SEL-SVHS-RR_STATUS2
P50
CUTOFF
GND-RGB-CRT
B-CRT
G-CRT
R-CRT
LINEDRIVE1
GND-LINEDRIVE
FRAMEDRIVE+
FRAMEDRIVE-
GND
EW-DRIVE
HFB_X-RAY-PROT
EHT-INFO
TILT
DYN-FASE-COR
STANDBY
LIGHT-SENSOR
PIP-MONO
Y-SCAVEM
SDA-S
SCL-S
POR
SOUND-ENABLE
L-SC1_AV1-IN
L-SC2_AV2-IN
GND-SCART-AV
L-SC2-OUT
L-SC1_AV1-OUT
R-SC2_AV2-IN
R-SC2-OUT
R-SC1_AV1-IN
R-SC1_AV1-OUT
FRONT-DETECT
Y_CVBS-FRONT-IN
C-FRONT-IN
L-FRONT-IN
R-FRONT-IN
HEADPHONE-L
HEADPHONE-R
L-CL_VL-OUT
R-CL_VL-OUT
GND-AUD
AUDIO-SL
AUDIO-C
AUDIO-SW
AUDIO-L
AUDIO-R
ON-OFF-LED
RC
KEYBOARD
DEGAUSSING
A11
8204_000_8224.5
CL 36532017_014.eps
230403

1200	F2
1201	G1
1205	I2
1932	F9
1933	B6
1934	A6
1935	E9
1936	D6
1937	B13
1940	F6
1943	E5
1948	D13
1951	A13
1952	E9
1953	D9
1955	F5
1961	C9
1965	D6
1966	G9
1997	E3
2200	D2
2201	F1
2202	G2
2203	G3
2455	I7
2483	B9
2496	B8
2914	E2
2915	E1
2916	C4
2917	E12
2918	F11
2929	E10
2930	F8
2931	D9
2940	B3
2941	I8
2942	I8
2943	I8
2944	E12
2945	H13
2946	I13
2947	I7
2948	H12
2949	I12
2950	G3
2951	G2
3200	F3
3201	F3
3210	D10
3211	D10
3212	D11
3213	C11
3250	H3
3261	E4
3262	F4
3427	A7
3428	A8
3429	B8
3430	A9
3432	A8
3903	F11
3904	E1
3907	C1
3910	C1
3928	C4
3929	D4
3930	D3
3938	F10
3939	G11
3940	G11
3941	E2
3942	E11
3943	E11
3945	F11
3999	A3
5901	C2
5902	A1
5903	A1
5904	H8
6200	G2
6201	G3
6202	G3
6402	B9
6901	A8
7210	D10
7211	D11
7901	C3
7902	F11
7908	E11
7910	B2
7911	D1
7912	C1
9201	C12
9203	C12
9205	E8
9206	D8
9215	G2
9225	E8
9226	D9
9228	A4
9229	A4
9250	E6
9251	E6
9901	C12
9902	C12
9903	D12
9904	C12
9905	F8
9906	E3
9907	C11
9908	C3
9909	B1
9980	B1
9982	F6
9983	C11
9987	B6
9988	B6
9989	B6
9990	B5
9998	I13
F904	D6
F905	E6
F906	E6
F907	F6
F908	F6
F909	F6
F911	G5
F914	E4
F915	E4
F916	E4
F917	E2
F918	F1
F919	G3
F920	H2
F921	A2
F922	A3
F924	D6
F927	G2
F928	B3
F929	C2
F930	F12
F931	E1
I201	D6
I202	D6
I203	E6
I204	E6
I205	E6
I206	E6
I207	I9
I208	I3
I209	G5
I210	H4
I211	I4
I213	B12
I215	C12
I217	H4
I225	I13
I226	I13
I230	D10
I231	D11
I232	D11
I233	D10
I904	G4
I905	G4
I906	C3
I907	C4
I908	A6
I909	B6
I910	B6
I911	B6
I912	C6
I913	C6
I914	C6
I915	C6
I916	E8
I917	E9
I918	E9
I919	F9
I920	F9
I921	C2
I922	E11
I923	E11
I924	E11
I925	E12
I926	F11
I927	D2
I928	I9
I929	H7
I931	F1
I932	G1
I933	C1
I934	F3
I935	F3
I936	D12
I937	C1
I938	F8
I939	F11
I940	B12
I941	F11
I942	D12
I943	C11
I944	B13
I945	E8
I946	D12
I947	B2
I948	D2
I949	F8
I950	E12
I951	D1
I952	D1
I958	G5
I959	F6
I960	E2
I961	E3
I962	G5
c001	H2
c002	I2

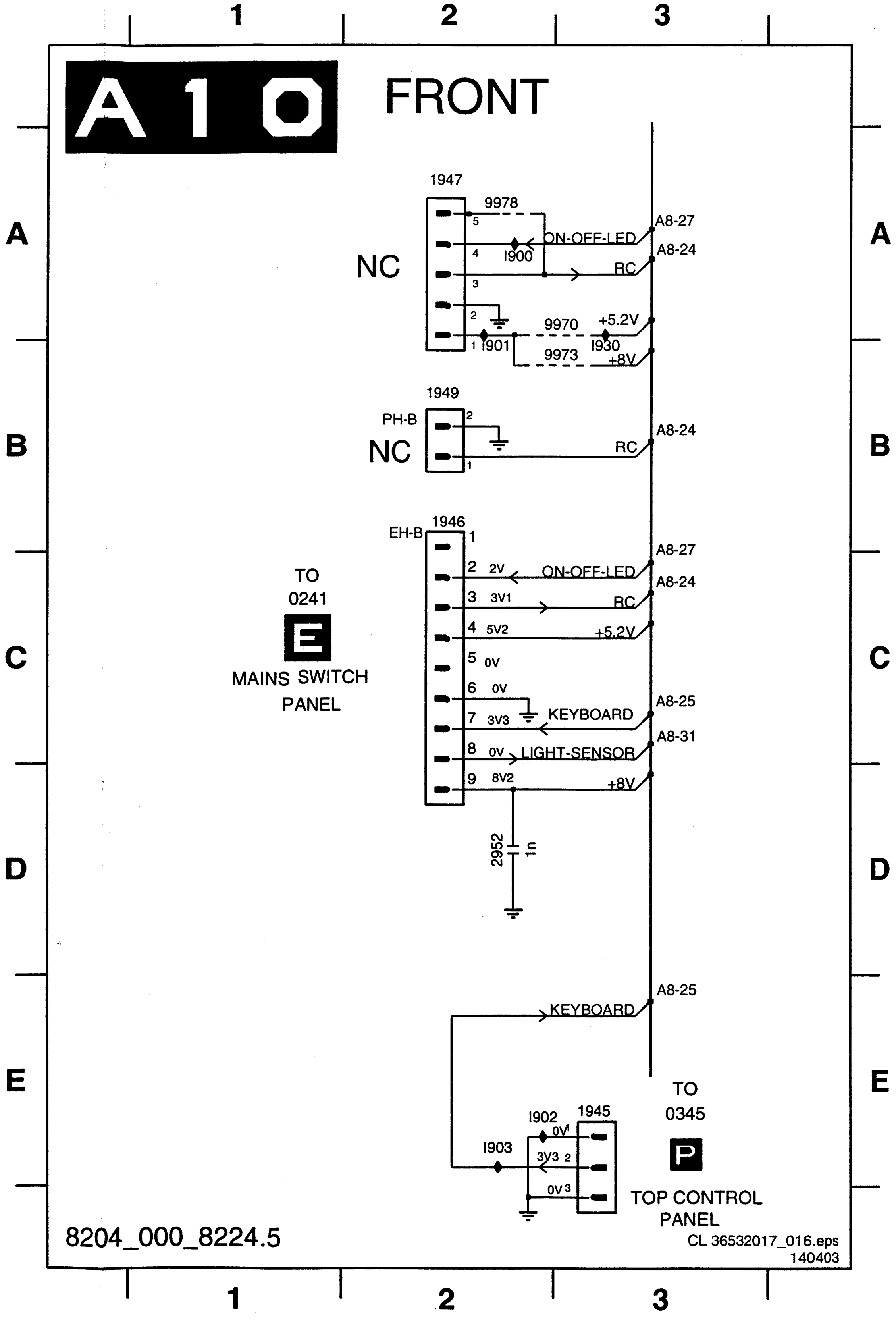
Large Signal Panel: Receiver

1950	A1
2900	B2
3900	A3
3901	B3
3902	C3
6900	B3
I953	A2
I954	A2
I955	B3
I956	B3
I957	A3


1
2
3
4
A
B
C
D
A9 RECEIVER
RES
1950
INP
CTRL CIRCUIT
AGC
BAND PASS
DEM
PIN
M1
M2
4
5
VS 2
OUT 1
GND
3
RC RECEIVER
I953
A71
I954
3900
220R
I957
+5.2V_MP
2900
100u
3901
470R
I955
6900
TLDR5400
I956
3902
1K8
RC
A8-24
ON-OFF-LED
A8-27
8204_000_8224.5
CL 36532017_015.eps
140403

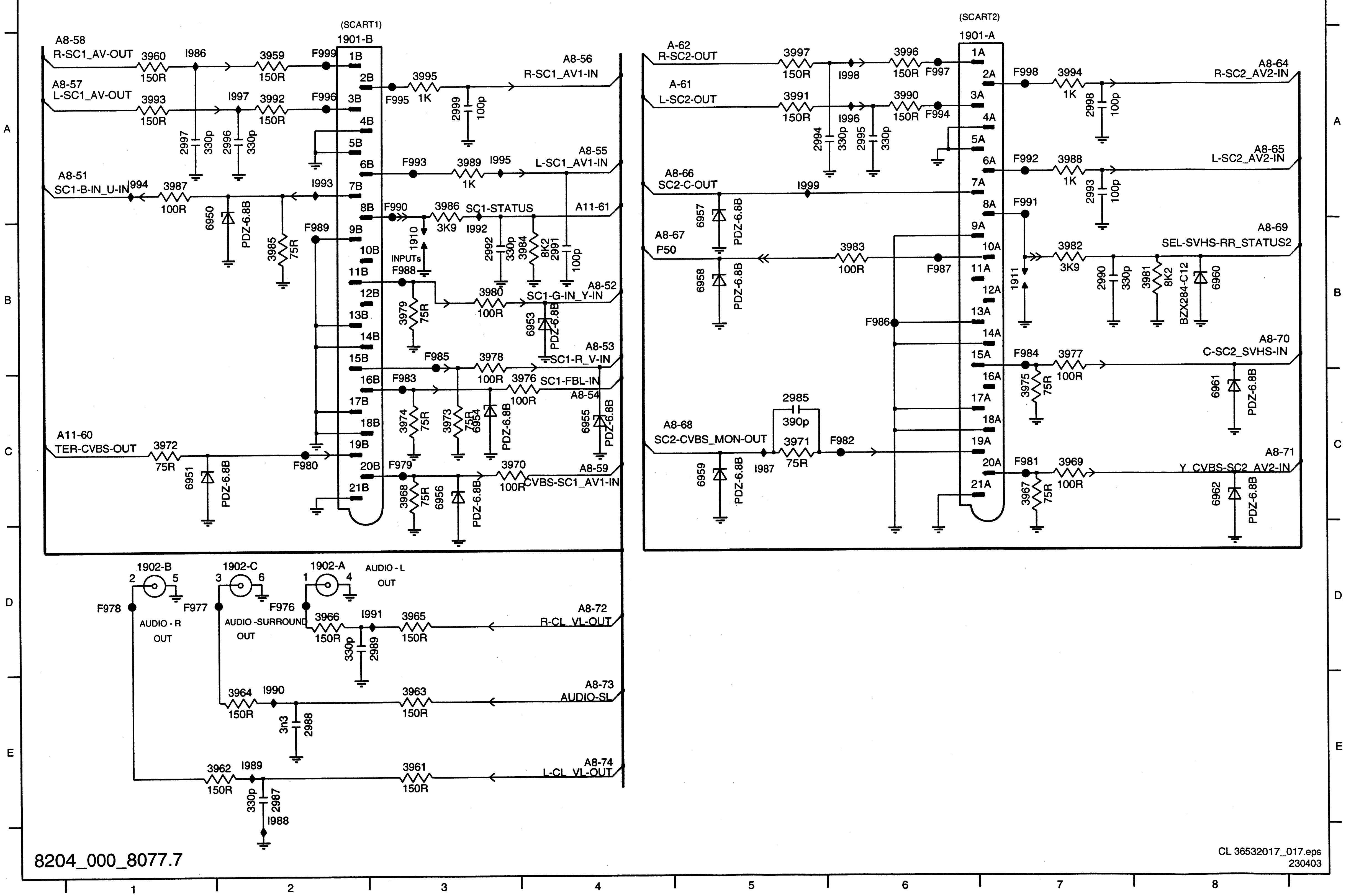
Large Signal Panel: Front

1945	E3
1946	B2
1947	A2
1949	B2
2952	D2
9970	A3
9973	B3
9978	A2
I900	A2
I901	B2
I902	E2
I903	E2
I930	B3


1
2
3
A
B
C
D
E
A10 FRONT
1947
9978
NC
ON-OFF-LED
A8-27
I900
A8-24
RC
9970
+5.2V
I901
I930
9973
+8V
1949
PH-B
NC
RC
A8-24
1946
EH-B
1
2 2V
3 3V1
4 5V2
5 0V
6 0V
7 3V3
8 0V
9 8V2
ON-OFF-LED
A8-27
RC
A8-24
+5.2V
KEYBOARD
A8-25
LIGHT-SENSOR
A8-31
+8V
TO 0241
E
MAINS SWITCH PANEL
2952
1n
KEYBOARD
A8-25
I902
1945
I903
0V
3V3
TO 0345
P
TOP CONTROL PANEL
8204_000_8224.5
CL 36532017_016.eps
140403

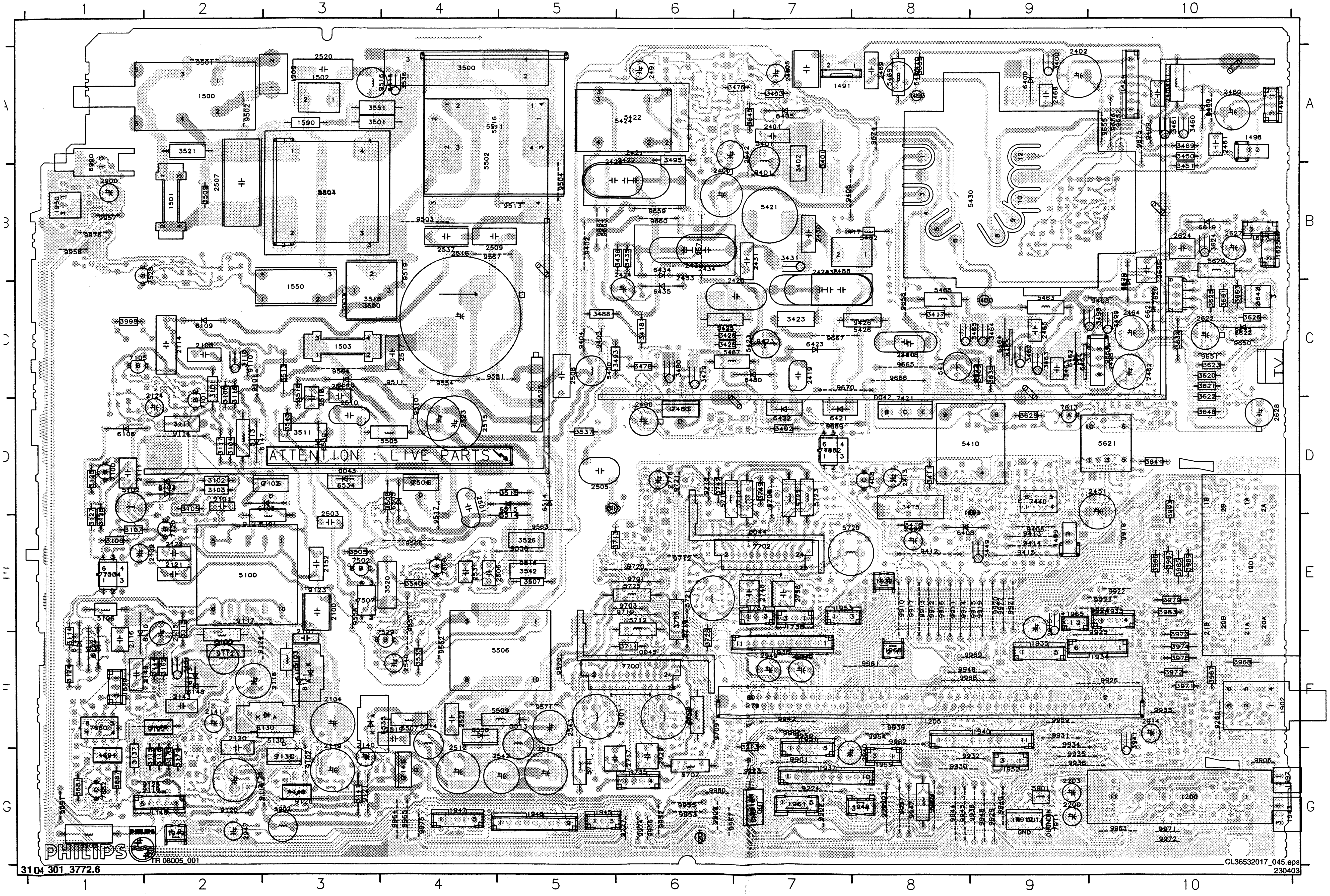
Large Signal Panel: Inputs/Outputs

A 1 1 INPUTS/OUTPUTS


A11
(SCART1)
1901-B
A8-58
R-SC1_AV-OUT
A8-57
L-SC1_AV-OUT
A8-51
SC1-B-IN_U-IN
A11-60
TER-CVBS-OUT
A8-56
R-SC1_AV1-IN
A8-55
L-SC1_AV1-IN
A11-61
SC1-STATUS
A8-52
SC1-G-IN_Y-IN
A8-53
SC1-R_V-IN
SC1-FBL-IN
A8-54
A8-59
CVBS-SC1_AV1-IN
INPUTs
(SCART2)
1901-A
A-62
R-SC2-OUT
A-61
L-SC2-OUT
A8-66
SC2-C-OUT
A8-67
P50
A8-68
SC2-CVBS_MON-OUT
A8-64
R-SC2_AV2-IN
A8-65
L-SC2_AV2-IN
A8-69
SEL-SVHS-RR_STATUS2
A8-70
C-SC2_SVHS-IN
A8-71
Y_CVBS-SC2_AV2-IN
1902-B
1902-C
1902-A
AUDIO - R OUT
AUDIO -SURROUND OUT
AUDIO - L OUT
A8-72
R-CL_VL-OUT
A8-73
AUDIO-SL
A8-74
L-CL_VL-OUT
PDZ-6.8B
BZX284-C12
8204_000_8077.7
CL 36532017_017.eps
230403

1901-A	A6
1901-B	A2
1902-A	D2
1902-B	D1
1902-C	D2
1910	B3
1911	B7
2985	C5
2987	E2
2988	E2
2989	D3
2990	B7
2991	B4
2992	B3
2993	A7
2994	A5
2995	A6
2996	A2
2997	A1
2998	A7
2999	A3
3959	A2
3960	A1
3961	E3
3962	E2
3963	E3
3964	E2
3965	D3
3966	D2
3967	C7
3968	C3
3969	C7
3970	C3
3971	C5
3972	C1
3973	C3
3974	C3
3975	C7
3976	C4
3977	B7
3978	B3
3979	B3
3980	B3
3981	B8
3982	B7
3983	B6
3984	B4
3985	B2
3986	A3
3987	A1
3988	A7
3989	A3
3990	A6
3991	A5
3992	A2
3993	A1
3994	A7
3995	A3
3996	A6
3997	A5
6950	A1
6951	C1
6953	B4
6954	C3
6955	C4
6956	C3
6957	A5
6958	B5
6959	C5
6960	B8
6961	C8
6962	C8
F976	D2
F977	D1
F978	D1
F979	C3
F980	C2
F981	C7
F982	C6
F983	C3
F984	B7
F985	B3
F986	B6
F987	B6
F988	B3
F989	B2
F990	A3
F991	A7
F992	A7
F993	A3
F994	A6
F995	A3
F996	A2
F997	A6
F998	A7
F999	A2
I986	A1
I987	C5
I988	E2
I989	E2
I990	E2
I991	D3
I992	B3
I993	A2
I994	A1
I995	A3
I996	A6
I997	A2
I998	A6
I999	A5

Layout Large Signal Panel (Top Side)


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
ATTENTION : LIVE PARTS
PHILIPS
3104 301 3772.6
TR 08005_001

CL36532017_045.eps
230403

Mapping Large Signal Panel (Top Side)

0042	C8
0043	D3
0044	E7
0045	F5
1146	G2
1148	G3
1149	F2
1200	G10
1201	G6
1205	F8
1417	B8
1424	A10
1430	C9
1491	A7
1492	A10
1493	A8
1495	C10
1498	A10
1499	D9
1500	A2
1501	B2
1502	A3
1503	C3
1505	A2
1510	E5
1550	B3
1590	A3
1601	G1
1620	F1
1625	B10
1627	B10
1693	D9
1735	G5
1737	E7
1738	E7
1901	E10
1902	F10
1932	E8
1933	E10
1934	F10
1935	F9
1936	F7
1937	G7
1940	F9
1943	G10
1945	G5
1946	G5
1947	G4
1948	G8
1949	G2
1950	B1
1951	G7
1952	G9
1953	E7
1955	G8
1961	G7
1965	E9
1966	F8
1997	G10
2100	E3
2101	D2
2102	E2
2104	F3
2107	F3
2108	C2
2111	D1
2114	C2
2115	E2
2116	F1
2118	F2
2119	F3
2120	F2
2121	E2
2122	E2
2124	C2
2126	G2
2140	G3
2141	F2
2143	F2
2148	F1
2152	E3
2200	G9
2203	G9
2400	B6
2401	A7
2402	A10
2405	A7
2413	D8
2418	C8
2419	C7
2420	C8
2421	B6
2422	A5
2423	A6
2424	C5
2425	C7
2426	C6
2430	B7
2431	B7
2432	B6
2433	B6
2434	B6
2435	C8
2450	A10
2451	D10
2460	A10
2461	A10
2462	C10
2463	C9
2464	C10
2465	C9
2468	A9
2469	A8
2487	A7
2488	C8
2490	D6
2491	A6
2492	E8
2501	D4
2503	E3
2505	D5
2506	E5
2507	A2
2508	C5
2509	B5
2510	D3
2511	G5
2512	G4
2515	D4
2516	B4
2517	C4
2518	D3
2519	F4
2520	A3
2522	F4
2523	D4
2531	E4
2537	B4
2540	F4
2541	C3
2542	G5
2543	F5
2622	C10
2624	B10
2625	B10
2627	B10
2628	D10
2642	A6
2717	G5
2729	G6
2740	E7
2758	E7
2778	D6
2900	B1
2914	F10
2915	E9
2940	F7
2947	G2
2948	F7
2949	F7
3101	C2
3102	D2
3103	D2
3104	D2
3105	E2
3106	E1
3107	E2
3108	C2
3110	C2
3111	D2
3113	E2
3114	E1
3115	G1
3116	G2
3117	D2
3118	C2
3124	F1
3125	D1
3126	E1
3127	E1
3137	G1
3141	G3
3144	F2
3161	F2
3162	F2
3170	G2
3171	G2
3213	F7
3400	A9
3401	A7
3402	A7
3403	A7
3409	C9
3411	D8
3415	D8
3416	E8
3417	C8
3418	C6
3423	C7
3425	C6
3426	C6
3431	B7
3435	B6
3436	B5
3449	E9
3450	A10
3451	B10
3460	A10
3461	A10
3462	C9
3463	C9
3464	C9
3465	C9
3469	A10
3476	A7
3478	C6
3479	C6
3480	C6
3488	C5
3492	D7
3493	C6
3495	A6
3498	C10
3499	C10
3500	A4
3501	A4
3505	E3
3507	E5
3508	D4
3509	B2
3511	D3
3513	C3
3514	E4
3515	D5
3516	C3
3518	C3
3520	E4
3521	A2
3526	E5
3533	F4
3536	A4
3537	D5
3540	E4
3542	E5
3543	D3
3550	C4
3551	A3
3620	C10
3621	C10
3622	C10
3623	C10
3624	B10
3625	C10
3626	C10
3628	D9
3634	C10
3635	C9
3641	D10
3642	B10
3645	A7
3648	D10
3661	C10
3663	C10
3681	G1
3687	G1
3689	A8
3711	F6
3713	E6
3728	F6
3747	E6
3749	D7
3755	E6
3904	E9
3941	F10
3967	F10
3968	F10
3971	F10
3972	F10
3973	F10
3974	E10
3975	F10
3979	E10
3983	E10
3985	E10
3986	E10
3987	E10
3989	E10
3993	D10
3998	C1
5100	E2
5102	D1
5103	F3
5104	E2
5105	F2
5106	E1
5111	F2
5112	F2
5113	D2
5130	F2
5400	C5
5401	A7
5402	B8
5410	D9
5411	C8
5421	B7
5422	A6
5423	C7
5424	A6
5425	C7
5426	C8
5430	B10
5461	A10
5463	C9
5465	C8
5466	A8
5467	C6
5469	A8
5502	A5
5503	A3
5504	A3
5505	D4
5506	E5
5507	F4
5509	F5
5511	A4
5513	G5
5514	G4
5515	A3
5516	A5
5620	B10
5621	D10
5701	F6
5702	F6
5707	G6
5708	F6
5711	G5
5712	F6
5715	E7
5716	E6
5720	E7
5721	E6
5722	D7
5723	D7
5725	E5
5901	G9
5902	G3
5903	G1
5904	G8
6103	D2
6105	D2
6106	D1
6107	F3
6109	C2
6110	E2
6111	F3
6113	F2
6114	D2
6120	F1
6121	E1
6122	F1
6130	F3
6147	D3
6148	F2
6400	A9
6405	A7
6408	E8
6421	D8
6422	D7
6423	C7
6434	B6
6435	C6
6460	A10
6462	C9
6463	C9
6464	C9
6465	C9
6480	C7
6505	D4
6510	C3
6514	D5
6515	D5
6525	C5
6530	D3
6534	D3
6535	F3
6536	G4
6619	B10
6620	C10
6621	C10
6622	C10
6900	B1
7100	D1
7101	C2
7102	D3
7103	E1
7104	E1
7105	C1
7120	E2
7131	F3
7141	G4
7408	D8
7421	D8
7440	D9
7480	D6
7482	D8
7483	D8
7502	E3
7504	D4
7506	E4
7507	E4
7528	B2
7529	F4
7613	D9
7620	C10
7680	F1
7682	G1
7700	F6
7702	E6
7910	G7
7911	G9
7912	G9
9101	C2
9102	F3
9110	C2
9112	F2
9114	D2
9117	E2
9118	G2
9119	G2
9120	G2
9121	G3
9122	F1
9123	E3
9124	F2
9125	G2
9126	G3
9127	E2
9223	G7
9224	G7
9227	G6
9260	F10
9401	B7
9402	B5
9403	C5
9404	C5
9405	E9
9406	B7
9408	C10
9409	A10
9410	A8
9411	A10
9412	E8
9413	E9
9414	E9
9415	E9
9423	C7
9425	C6
9426	C8
9501	A2
9502	A2
9503	B4
9504	B5
9510	D4
9511	C4
9513	B5
9515	E5
9516	A3
9517	E4
9518	C3
9519	B4
9551	C4
9552	F4
9554	C4
9556	E5
9557	E4
9558	E3
9563	E5
9564	C3
9566	E4
9567	B4
9570	F5
9571	F5
9620	C10
9622	C10
9623	C9
9650	C10
9651	C10
9652	A10
9655	A10
9656	A10
9658	C8
9659	B6
9660	B6
9661	B5
9663	B5
9664	C10
9665	C8
9666	C8
9667	C7
9669	D7
9670	C7
9671	B6
9674	A8
9675	A10
9701	E6
9703	E6
9708	D7
9709	F6
9712	E6
9715	D6
9718	E6
9719	E6
9720	E6
9721	D6
9901	G7
9902	G8
9903	G8
9906	G10
9907	G7
9909	G6
9910	E8
9911	E8
9912	E8
9913	E8
9914	E8
9915	E9
9916	E8
9917	E8
9918	E10
9919	E9
9920	E9
9921	E9
9922	E10
9923	E10
9924	E10
9925	E10
9926	F10
9929	G9
9930	G8
9931	F9
9932	G9
9933	F10
9934	F9
9935	G9
9936	G9
9937	G8
9938	G9
9939	F8
9940	G9
9942	F7
9943	G8
9944	G8
9945	G8
9946	G9
9947	G8
9948	F8
9949	F7
9950	F7
9951	G1
9952	G6
9953	G6
9954	F8
9955	G6
9956	G6
9957	B1
9958	B1
9959	F9
9961	F8
9963	G10
9964	G4
9965	G4
9967	G6
9968	F8
9969	F9
9971	G10
9972	G10
9974	G6
9975	G4
9976	B1
9977	E9
9980	G6
9982	F8
9996	F7

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Mapping Large Signal Panel (Bottom Side)

0042	C3
0043	D8
0044	E4
0045	F6
1146	G9
1148	G8
1149	F9
1200	G1
1201	G5
1205	F3
1417	B4
1424	A1
1430	C2
1491	A3
1492	A1
1493	A3
1495	C2
1498	A1
1499	E2
1500	A9
1501	B9
1502	A8
1503	C8
1505	A8
1510	D6
1550	C8
1590	A8
1601	G10
1620	F10
1625	B1
1627	B1
1693	D2
1735	G5
1737	E4
1738	E4
1901	E1
1902	F1
1932	E3
1933	E2
1934	F2
1935	F2
1936	E4
1937	G4
1940	F2
1943	G1
1945	G6
1946	G6
1947	G7
1948	G3
1949	G9
1950	B10
1951	G4
1952	G2
1953	E3
1955	G3
1961	G4
1965	E2
1966	F3
1997	G1
2100	E8
2101	E9
2102	E9
2103	D9
2104	F8
2105	D9
2106	G9
2107	F8
2108	C9
2109	F10
2110	D10
2111	D10
2112	D9
2114	C9
2115	F9
2116	F10
2118	F8
2119	G8
2120	G9
2121	E9
2122	E9
2123	C10
2124	C9
2126	G9
2130	G8
2131	G9
2140	F8
2141	F9
2143	F9
2144	C10
2145	C9
2147	G8
2148	F10
2149	F10
2150	G9
2152	E8
2153	E10
2154	F9
2200	G2
2201	G1
2202	G1
2203	G2
2204	F3
2400	B5
2401	A4
2402	A2
2403	D2
2404	D2
2405	A4
2409	D3
2412	D3
2413	D3
2414	D3
2415	D3
2417	C3
2418	C3
2419	C4
2420	C3
2421	B5
2422	B5
2423	B5
2424	C5
2425	B4
2426	C5
2430	B4
2431	B4
2432	B5
2433	B5
2434	B5
2435	C4
2440	D2
2441	B2
2442	B2
2443	B2
2444	B1
2445	B1
2448	A5
2450	A1
2451	E1
2454	E2
2455	F3
2457	D1
2458	E3
2460	A1
2461	A1
2462	C1
2463	C2
2464	C1
2465	C2
2466	A5
2468	A2
2469	A3
2480	C5
2481	C5
2482	D5
2483	F2
2487	A4
2488	C4
2490	D5
2491	A5
2492	E3
2493	E2
2494	B3
2495	B4
2496	F2
2497	A5
2498	A5
2499	A5
2501	D7
2502	E7
2503	D8
2504	D8
2505	D6
2506	E6
2507	B9
2508	C6
2509	B6
2510	D8
2511	G6
2512	G7
2513	E7
2514	E7
2515	D7
2516	C7
2517	C7
2518	D8
2519	F7
2520	A8
2522	F7
2523	D7
2524	E7
2525	E7
2528	B9
2530	E7
2531	E7
2535	D6
2537	B7
2538	E7
2540	F7
2541	D8
2542	G7
2543	F6
2544	D7
2601	F10
2603	D1
2604	C1
2605	D1
2620	C1
2621	C1
2622	C1
2623	D2
2624	B1
2625	B1
2627	B1
2628	D1
2629	B1
2630	D1
2631	D1
2633	C1
2635	D2
2642	A4
2653	C1
2656	D2
2657	D2
2659	D2
2660	A5
2661	C1
2662	E2
2702	E5
2704	E5
2705	D5
2706	F5
2707	F5
2708	F5
2709	F6
2710	F6
2711	F5
2712	F6
2713	D5
2714	F6
2715	F6
2716	F5
2717	G5
2718	F5
2719	G6
2720	F5
2721	F5
2722	F5
2723	E4
2724	F5
2725	E5
2726	F5
2727	F5
2728	F5
2729	F5
2740	E4
2741	E4
2742	E4
2743	E4
2744	E5
2745	E4
2746	E5
2747	E4
2748	D5
2749	D5
2750	E4
2751	E4
2753	E4
2754	D4
2755	D4
2756	E4
2757	D4
2758	E4
2759	E4
2760	E4
2761	E5
2762	E4
2763	E4
2777	F5
2778	D5
2779	F5
2780	F6
2781	F6
2782	E4
2783	E5
2784	E4
2785	E5
2786	F6
2787	E5
2791	E5
2792	E5
2900	B10
2914	F1
2915	E2
2916	F1
2917	E2
2918	F1
2929	E4
2930	F2
2931	F4
2940	F4
2941	F3
2942	G3
2943	G3
2944	E1
2945	F4
2946	F4
2947	G9
2948	F4
2949	F4
2950	G1
2951	G2
2952	G6
2985	F1
2987	F1
2988	F1
2989	F1
2990	E1
2991	E1
2992	E1
2993	D1
2994	D1
2995	E1
2996	E1
2997	D1
2998	D1
2999	D1
3101	C9
3102	D9
3103	D9
3104	D9
3105	D9
3106	E10
3107	E10
3108	D9
3109	G10
3110	C9
3111	D9
3113	E9
3114	E10
3115	F9
3116	G9
3117	D9
3118	D9
3120	E9
3121	E9
3122	E9
3123	F10
3124	F10
3125	D10
3126	E10
3127	E10
3130	F9
3131	F9
3132	G9
3133	F9
3134	G8
3135	G9
3136	F8
3137	G10
3140	F9
3141	G8
3142	G8
3143	G8
3144	F9
3145	D9
3146	C9
3147	D9
3148	C9
3149	C10
3150	C9
3151	G9
3152	C9
3153	F9
3155	G8
3156	G9
3157	G8
3158	G9
3159	G8
3160	C9
3161	F9
3162	F9
3164	G9
3165	G9
3166	G10
3167	G10
3168	F10
3170	G9
3171	G9
3200	G1
3201	G1
3210	F5
3211	G4
3212	F5
3213	F4
3214	F3
3250	G2
3261	G1
3262	G1
3400	A2
3401	A4
3402	A4
3403	A4
3404	D3
3406	D3
3407	D3
3409	C2
3410	C3
3411	D3
3412	D2
3414	D3
3415	D3
3416	E3
3417	C3
3418	C5
3419	D2
3420	D2
3421	D2
3422	D2
3423	C4
3425	C5
3426	C5
3427	F2
3428	F3
3429	F2
3430	F3
3431	B4
3432	F2
3435	B5
3436	B6
3437	B2
3440	E2
3441	D2
3442	D2
3443	D2
3444	B2
3445	B2
3446	B2
3447	B2
3448	B1
3449	E2
3450	A1
3451	B1
3452	B1
3453	B1
3454	B2
3455	D2
3456	D2
3457	D2
3458	E3
3459	E3
3460	A1
3461	A1
3462	C2
3463	C2
3464	C2
3465	C2
3466	A5
3467	A4
3469	A1
3472	A5
3474	A5
3475	A6
3476	A4
3478	C5
3479	C5
3480	C5
3481	D5
3482	D5
3483	D5
3484	D4
3485	D3
3486	D2
3487	E2
3488	C6
3489	D5
3490	D4
3491	A5
3492	D4
3493	C5
3495	B5
3496	D4
3497	A4
3498	C2
3499	C1
3500	A7
3501	A8
3504	E7
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3506	E7
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3511	D8
3512	D8
3513	C8
3514	E6
3515	D6
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3517	E7
3518	C8
3519	E7
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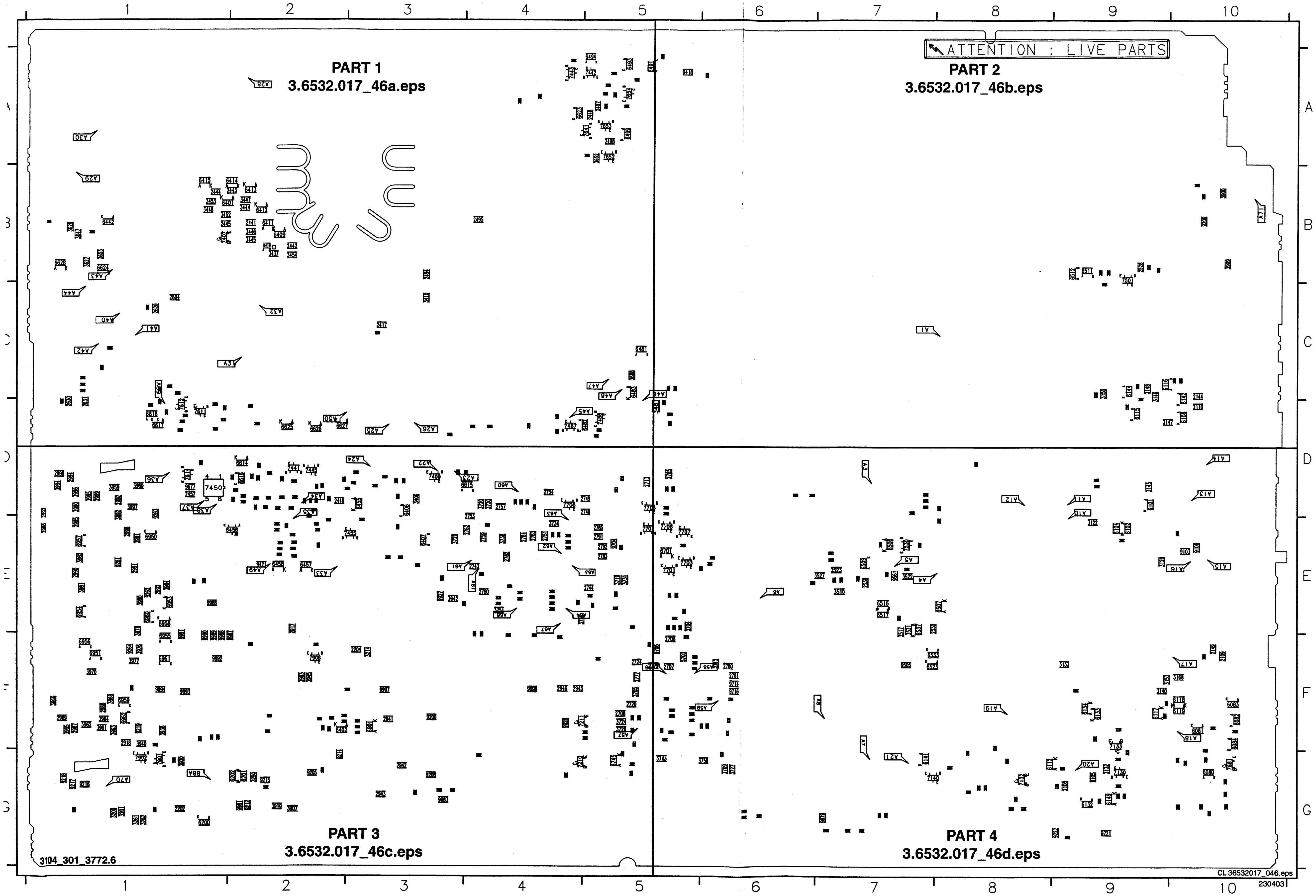
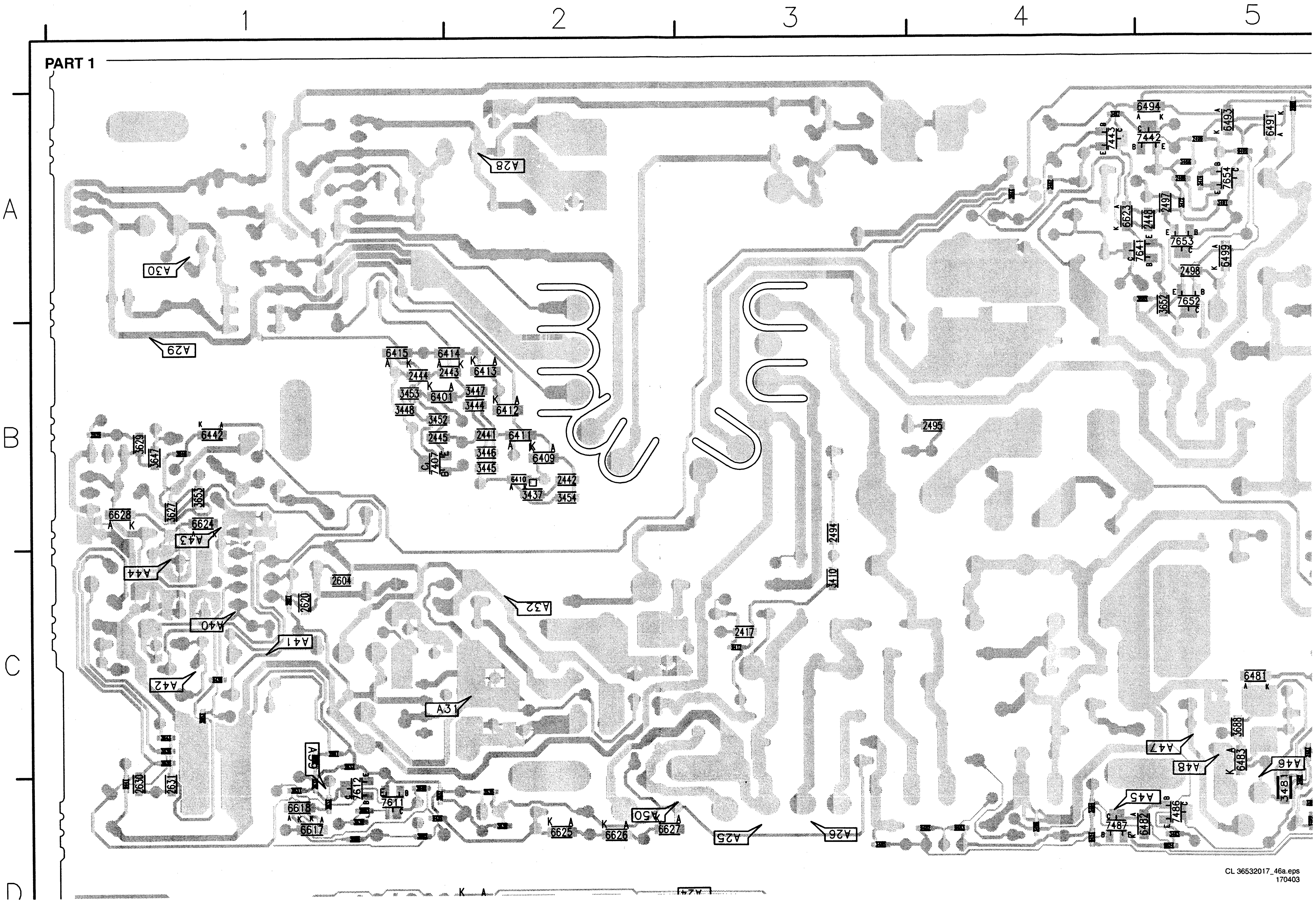
3521	A9
3522	E7
3523	E7
3524	B9
3525	E7
3526	E6
3527	E7
3528	C9
3529	B9
3530	E7
3531	E7
3532	B9
3533	F7
3534	B9
3535	D6
3536	A7
3537	D6
3540	E7
3542	E6
3543	D8
3547	E8
3549	E6
3550	C8
3551	A8
3552	D7
3553	D7
3610	D2
3611	E2
3620	C1
3621	C1
3622	C1
3623	C1
3624	B1
3625	C1
3626	C1
3627	B1
3628	D2
3629	B1
3630	C1
3631	D1
3632	D1
3633	D1
3634	C1
3635	C2
3636	D2
3637	D1
3638	C1
3639	D1
3640	D1
3641	D1
3642	B1
3643	C1
3644	A4
3645	A4
3646	B1
3647	B1
3648	D1
3649	F10
3652	A5
3653	B1
3654	E2
3655	D2
3656	E2
3657	D2
3658	E2
3659	D2
3660	D1
3661	C1
3662	D1
3663	B1
3664	D2
3665	A5
3681	G10
3682	G10
3683	G10
3684	F10
3685	G10
3686	G10
3687	G10
3688	C5
3689	A3
3690	C1
3701	E5
3702	E5
3703	D5
3704	E5
3705	F5
3706	F5
3707	F5
3708	F6
3709	G6
3710	F5
3711	F5
3712	F5
3713	E6
3714	E5
3715	D5
3716	D5
3717	G5
3718	G5
3719	E5
3720	D4
3721	F5
3722	F5
3723	F5
3724	F5
3725	F5
3726	F5
3727	G6
3728	F5
3729	E3
3730	D4
3731	E5
3732	E4
3733	E4
3734	E4
3735	E4
3736	E5
3737	E4
3738	E4
3739	E4
3740	E4
3741	E4
3742	E4
3743	G5
3744	E4
3745	G5
3746	E6
3747	D5
3748	D5
3749	D4
3750	G6
3751	E4
3752	E4
3755	E5
3760	F5
3790	E5
3791	F5
3792	E5
3793	F5
3794	D4
3795	D4
3796	D4
3797	E4
3798	E6
3900	B10
3901	B10
3902	B10
3903	F2
3904	E2
3907	G2
3910	G2
3928	F1
3929	F1
3930	G1
3938	F1
3939	F1
3940	F1
3941	G1
3942	E3
3943	F2
3945	F2
3959	D1
3960	D1
3961	F1
3962	F1
3963	F1
3964	F1
3965	F1
3966	F1
3967	F1
3968	F1
3969	F1
3970	F1
3971	F1
3972	F1
3973	E1
3974	F1
3975	F1
3976	F1
3977	F1
3978	E1
3979	E1
3980	E1
3981	E1
3982	E1
3983	E1
3984	E1
3985	E1
3986	E1
3987	E1
3988	E1
3989	E1
3990	D1
3991	E1
3992	D1
3993	D1
3994	D1
3995	D1
3996	D1
3997	D1
3998	C10
3999	B10
5100	E9
5102	D10
5103	F8
5104	E8
5105	F9
5106	E10
5111	F9
5112	F9
5113	D9
5130	F9
5400	C6
5401	A4
5402	B3
5410	D3
5411	C3
5421	B4
5422	A5
5423	C4
5424	A5
5425	C5
5426	C4
5430	B2
5461	A1
5463	C2
5465	C3
5466	A3
5467	C4
5469	A3
5502	B7
5503	B8
5504	B8
5505	D7
5506	F6
5507	F7
5509	F7
5511	A6
5513	F6
5514	F7
5515	A8
5516	A7
5620	B1
5621	D1
5701	F6
5702	F5
5703	F5
5707	G5
5708	F5
5711	G6
5712	F5
5715	D4
5716	D5
5720	E4
5721	E5
5722	D4
5723	D4
5725	E6
5901	G2
5902	G8
5903	G10
5904	G3
6080	G10
6081	F10
6082	F10
6083	F10
6084	F10
6101	D9
6102	E9
6103	D9
6104	E9
6105	D9
6106	D10
6107	F8
6108	D10
6109	C9
6110	F9
6111	F8
6112	G9
6113	F9
6114	D9
6115	D9
6116	C9
6117	F9
6118	F10
6119	F10
6120	F10
6121	E10
6122	E10
6130	F8
6132	G9
6133	F9
6134	F9
6141	G7
6142	C10
6144	C9
6147	D8
6148	F9
6149	G9
6200	G1
6201	G2
6202	G2
6400	A2
6401	B1
6402	F2
6405	A4
6406	D3
6407	E3
6408	E3
6409	B2
6410	B2
6411	B2
6412	B2
6413	B2
6414	B2
6415	B1
6421	D4
6422	D4
6423	C4
6434	B5
6435	C5
6442	B1
6455	D3
6456	E1
6457	E2
6458	E2
6460	A1
6462	C2
6463	C2
6464	C2
6465	C2
6480	C4
6481	C5
6482	D5
6483	C5
6491	A5
6493	A5
6494	A5
6499	A5
6505	D7
6506	E7
6507	E7
6509	E7
6510	C8
6511	B9
6512	C9
6514	D6
6515	D6
6516	E7
6517	E7
6523	F7
6525	D6
6530	D8
6533	F8
6534	D8
6535	F8
6536	G7
6537	E7
6614	D2
6615	D3
6616	D2
6617	D1
6618	D1
6619	B1
6620	C1
6621	C1
6622	C1
6623	A5
6624	B1
6625	D2
6626	D2
6627	D2
6628	B1
6701	E5
6745	G5
6900	B10
6901	F3
6950	E1
6951	F1
6953	E1
6954	E1
6955	E1
6956	F1
6957	E1
6958	E1
6959	F1
6960	E1
6961	F1
6962	F1
7100	D10
7101	D9
7102	D8
7103	E10
7104	E10
7105	C10
7120	E9
7130	G9
7131	F8
7132	G8
7133	F9
7140	G7
7141	G7
7210	G5
7211	F5
7407	B1
7408	D3
7409	D3
7421	C3
7440	D2
7441	D2
7442	A5
7443	A4
7445	D2
7450	D1
7455	E3
7480	D5
7482	D3
7483	D3
7486	D5
7487	D4
7501	C9
7502	E8
7504	D7
7506	E7
7507	E8
7528	C9
7529	E7
7530	E7
7611	D1
7612	C1
7613	D2
7614	D1
7620	B1
7641	A4
7652	B5
7653	A5
7654	A5
7680	F10
7681	G10
7682	G10
7700	F5
7701	E5
7702	E4
7703	E5
7704	E5
7705	D5
7706	E5
7707	E5
7708	D4
7901	G1
7902	G1
7908	F2
7910	G4
7911	G2
7912	G2
9101	C9
9102	F8
9103	E10
9105	G9
9106	E10
9107	F9
9108	F9
9110	C9
9112	F9
9114	D9
9117	E9
9118	G9
9119	G9
9120	G9
9121	G8
9122	F9
9123	E8
9124	F9
9125	G9
9126	G8
9127	E9
9128	G8
9200	F3
9201	G4
9202	F2
9203	G3
9204	F3
9205	G2
9206	G2
9207	G3
9208	G3
9209	B10
9210	F4
9211	F4
9212	G2
9214	G2
9215	G2
9216	G1
9217	G1
9218	G1
9219	F1
9221	G9
9222	G9
9223	G4
9224	G4
9225	F2
9226	F2
9227	G5
9228	G9
9229	G7
9250	F4
9251	F4
9260	F1
9261	E1
9262	E1
9263	D1
9264	F1
9401	B4
9402	B6
9403	C6
9404	C6
9405	E2
9406	B4
9408	C1
9409	A1
9410	A3
9411	A1
9412	E3
9413	E2
9414	E2
9415	E2
9417	C3
9418	A5
9421	E2
9422	E3
9423	C4
9424	D4
9425	C5
9426	C3
9427	E2
9428	D2
9429	E2
9430	E2
9431	D2
9432	E2
9433	D3
9434	D2
9435	D1
9436	D2
9437	E3
9438	C1
9440	G10
9441	D1
9443	D3
9481	E2
9482	D4
9483	D4
9499	A5
9501	A9
9502	A9
9503	B7
9504	B6
9505	F7
9510	D7
9511	C7
9513	B6
9515	E6
9516	A7
9517	E7
9518	B8
9519	B7
9551	C7
9552	F7
9554	C7
9556	E6
9557	E7
9558	E8
9560	D7
9561	E7
9563	E6
9564	C8
9566	E7
9567	B7
9570	F6
9571	F6
9620	B1
9621	G10
9622	C1
9623	C3
9624	D5
9650	C1
9651	C1
9652	A1
9655	A1
9656	A1
9658	C3
9659	B5
9660	B5
9661	B6
9663	B6
9664	C1
9665	C3
9666	C3
9667	C4
9669	D4
9670	C4
9671	B5
9674	A3
9675	A1
9676	E2
9677	D1
9701	E5
9702	E5
9703	E5
9704	E5
9705	F5
9706	E6
9707	E5
9708	D4
9709	F5
9711	D5
9712	E5
9713	D5
9714	F6
9715	D5
9716	F6
9717	F5
9718	E5
9719	E5
9720	E5
9721	D5
9901	G4
9902	G3
9903	G3
9904	G3
9905	E3
9906	G1
9907	G4
9908	G1
9909	G5
9910	E3
9911	E3
9912	E3
9913	E3
9914	E3
9915	E2
9916	E3
9917	E3
9918	E1
9919	E2
9920	E2
9921	E2
9922	E1
9923	E1
9924	E1
9925	F1
9926	F1
9927	E3
9928	F4
9929	G2
9930	G3
9931	F2
9932	G2
9933	F1
9934	F2
9935	G2
9936	G2
9937	G3
9938	G2
9939	F3
9940	G2
9942	F4
9943	G3
9944	G3
9945	G3
9946	G2
9947	G3
9948	F3
9949	F4
9950	F4
9951	G10
9952	G5
9953	G5
9954	F3
9955	G5
9956	G5
9957	B10
9958	B10
9959	F2
9960	G6
9961	F3
9962	G6
9963	G1
9964	G7
9965	G7
9966	G7
9967	G5
9968	F3
9969	F2
9970	G7
9971	G1
9972	G1
9973	G7
9974	G5
9975	G7
9976	B10
9977	E2
9978	G7
9979	G7
9980	G5
9981	G2
9982	F3
9983	G3
9985	E1
9986	E1
9987	F2
9988	F1
9989	F1
9990	F1
9991	F1
9992	F1
9993	F1
9994	F1
9996	F4
9997	F3
9998	F4

CL36532017_46m.eps
230403

Layout Large Signal Panel (Overview Bottom Side)

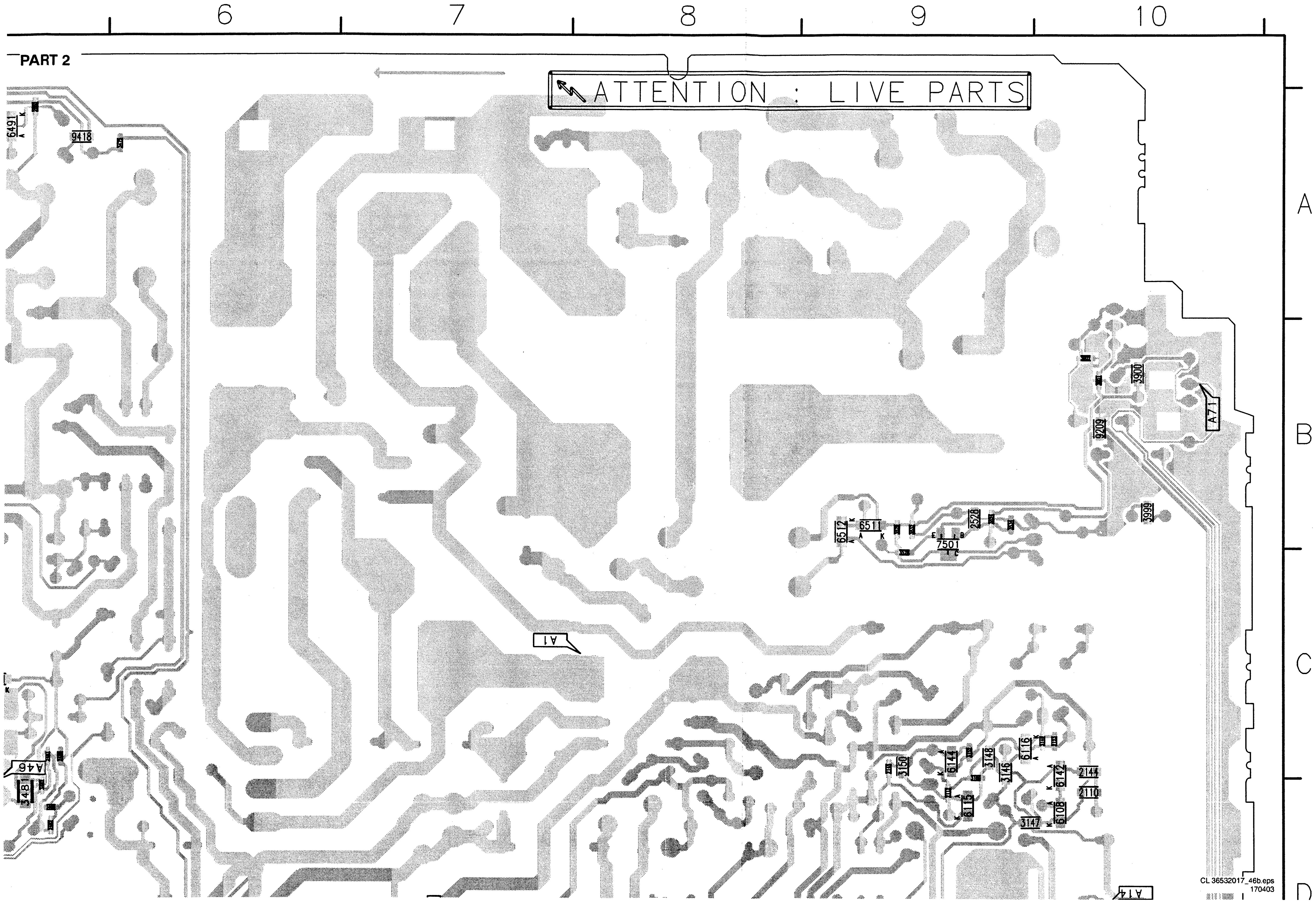

ATTENTION : LIVE PARTS
PART 1
3.6532.017_46a.eps
PART 2
3.6532.017_46b.eps
PART 3
3.6532.017_46c.eps
PART 4
3.6532.017_46d.eps
7450
3104_301_3772.6
CL 36532017_046.eps
230403
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G

Layout Large Signal Panel (Part 1 Bottom Side)

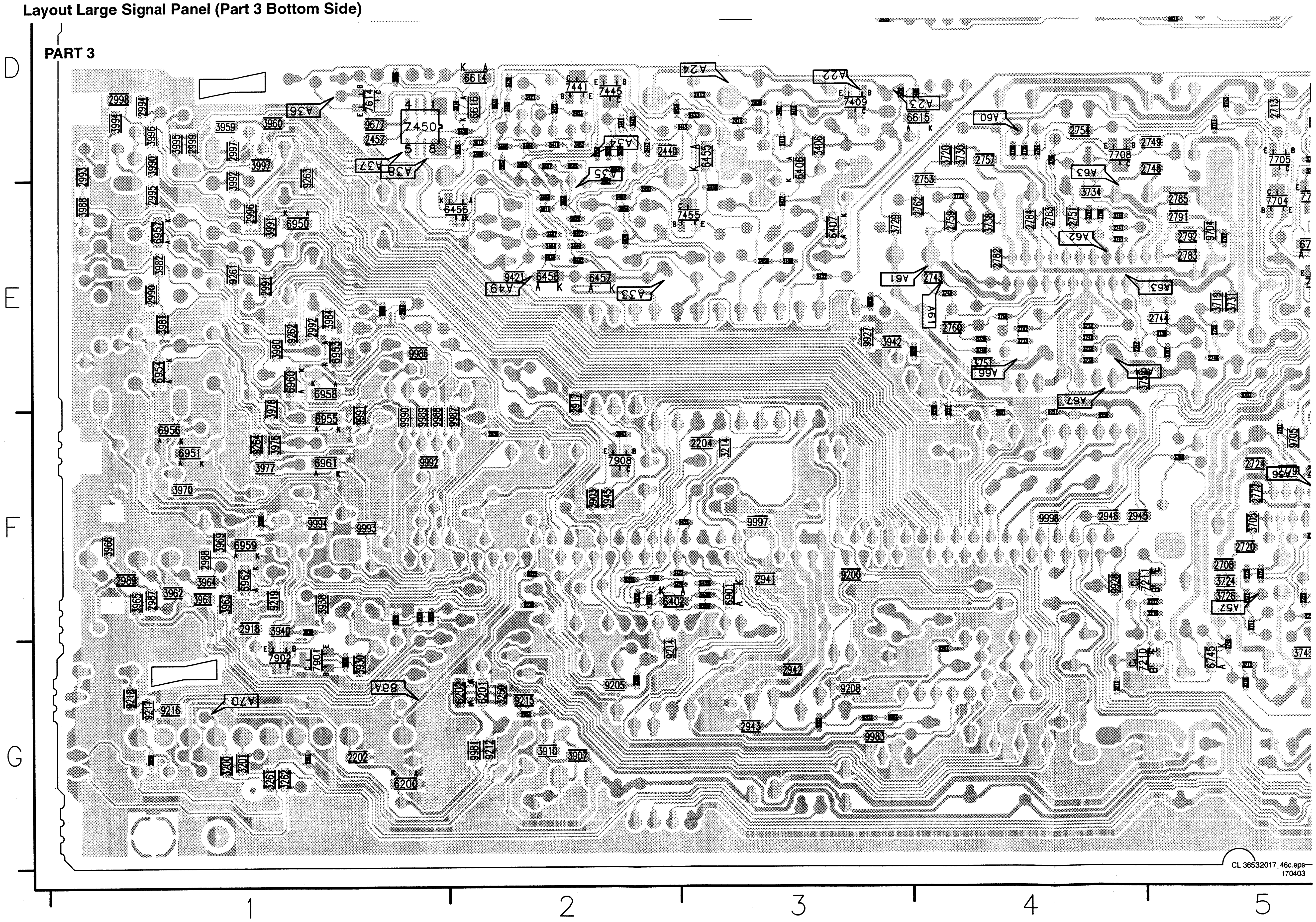

1
2
3
4
5
A
B
C
D
PART 1
A28
A30
A29
6415
6414
6413
2444
2443
3453
6401
3447
3444
6412
3448
3452
2445
2441
6411
3446
6409
7407
3445
6410
3437
2442
3454
6442
3629
3647
3627
3653
6628
6624
A43
A44
2604
2620
A32
A40
A41
A42
A31
2630
2631
A39
6618
6617
7612
7611
6625
6626
6627
A50
A25
A26
2417
3410
2494
2495
6494
6493
6491
7443
7442
7654
6523
2446
2497
7653
7641
6499
2498
3652
7652
6481
3688
A47
A48
6483
A46
3481
A45
6482
7486
7487
A24

CL 36532017_46a.eps
170403

Layout Large Signal Panel (Part 2 Bottom Side)

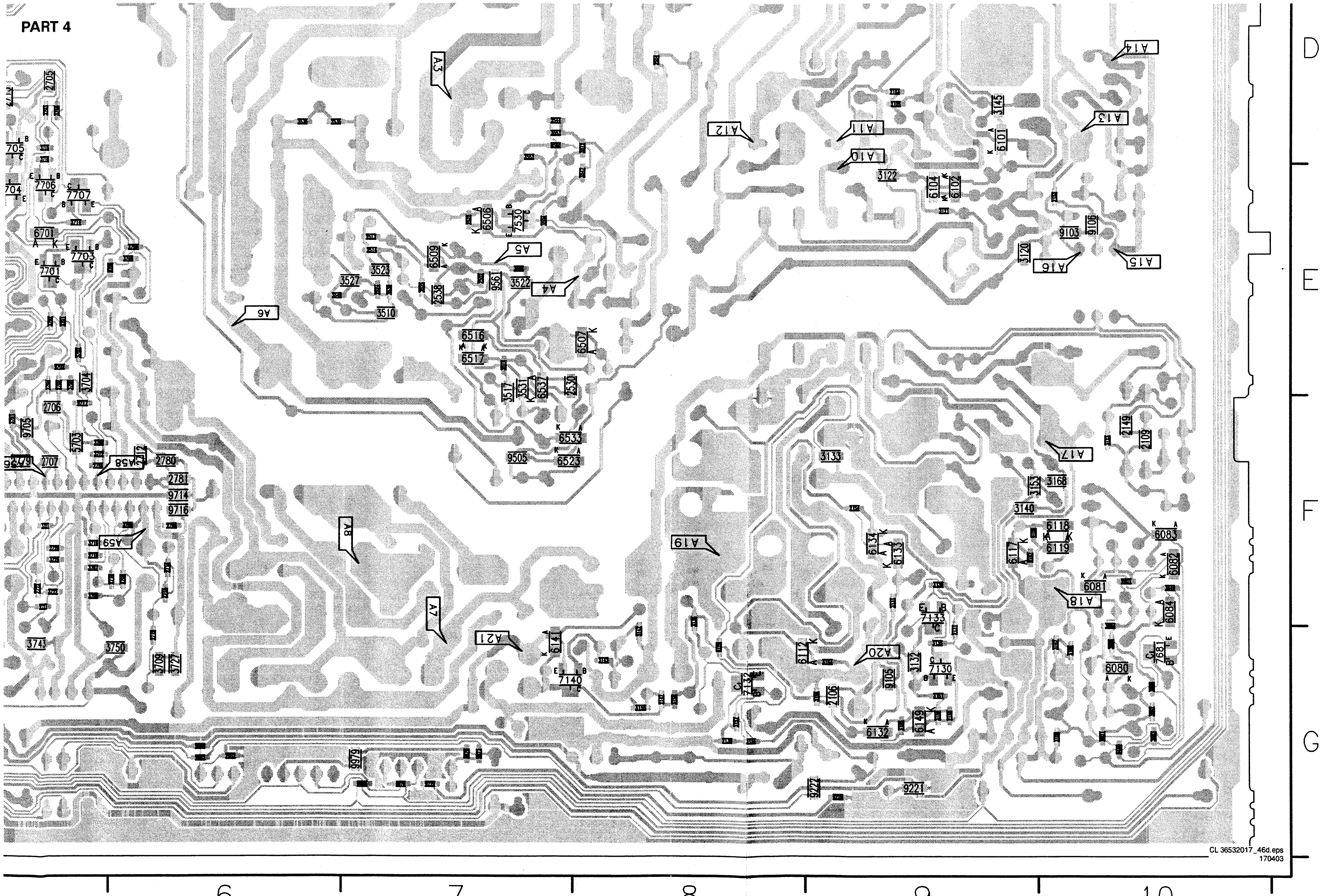

6
7
8
9
10
A
B
C
D
PART 2
ATTENTION : LIVE PARTS
6491
9418
A71
3900
9209
3999
6512
6511
2528
7501
A1
A46
3481
3150
6144
3148
3146
6116
2144
6142
2110
6115
6108
3147
A14
CL 36532017_46b.eps
170403

Layout Large Signal Panel (Part 3 Bottom Side)


PART 3
D
E
F
G
1
2
3
4
5
2998
2994
3994
3959
3960
A36
7614
9677
2457
7450
6614
6616
7441
7445
A24
A22
7409
A23
6615
A60
2713
2754
2749
7708
2748
7705
7704
3996
3995
2999
3990
2997
3997
3992
2993
3988
2995
2996
3991
6950
9263
A37
A38
6456
A34
A35
2440
6455
6406
3406
3720
3730
2757
A63
3734
2785
2791
2792
2783
9704
2753
2762
2759
3733
2784
2763
2751
A62
6407
7455
3729
2782
6957
3982
9261
2991
2990
3981
9421
6458
6457
A49
A33
A61
2743
A91
2760
A63
3719
2744
3927
3942
3751
A66
A64
A67
2992
3984
3980
9262
6953
9986
6954
6960
6958
3978
6955
9991
9990
9989
9988
9987
2917
6956
6951
3264
3976
3977
6961
9992
2204
3211
7908
3970
3903
3945
9997
9998
2946
2945
2724
9705
2777
3705
2720
3966
3969
6959
2988
2989
3964
3962
3961
3965
3987
3963
3219
3938
2941
9200
9928
7211
2708
3724
3726
A57
6402
6901
2918
3940
7902
7901
3930
9214
7210
6745
A68
6202
6201
3250
9215
9205
2942
9208
2943
9983
9218
9217
9216
A70
2202
6200
3200
3201
3261
3262
9981
9217
3910
3907

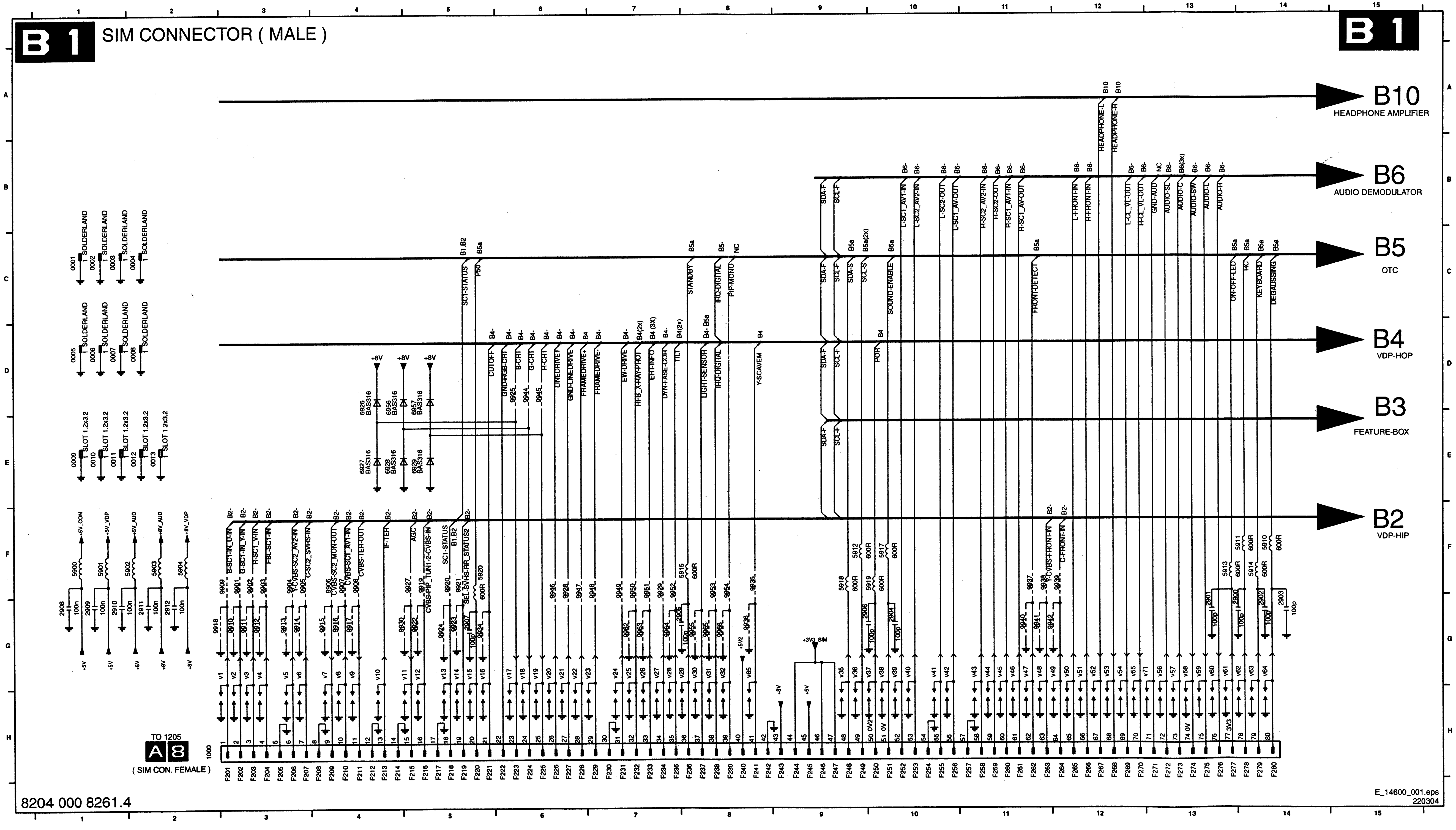
CL 36532017_46c.eps
170403

Layout Large Signal Panel (Part 4 Bottom Side)

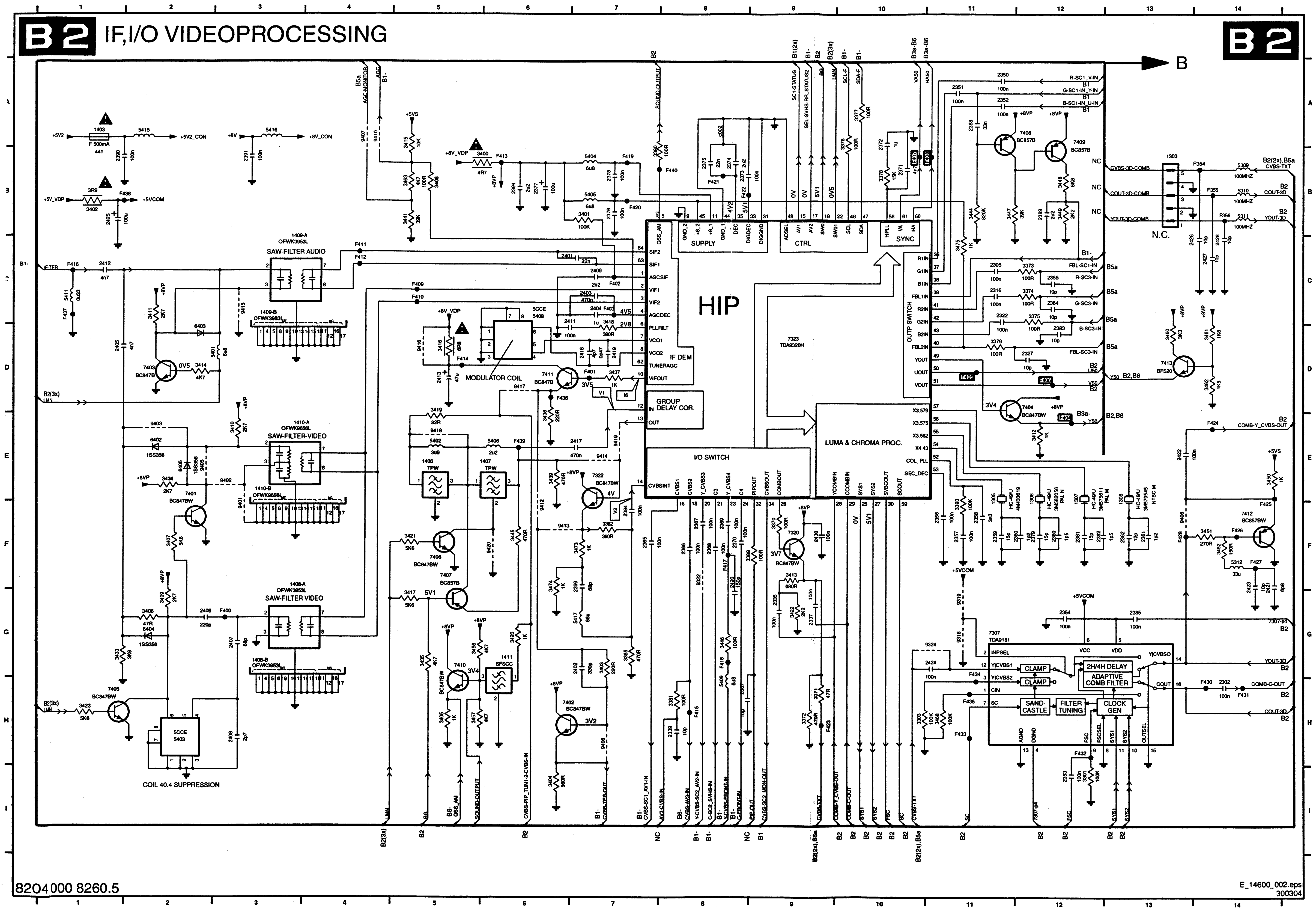

PART 4
D
E
F
G
6
7
8
9
10
A3
A4
A5
A6
A7
A8
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
A21
A58
A59
CL 36532017_46d.eps
170403

Small Signal Board: SIM Connector (Male)

v1 G3	v6 G3	v11 G5	v16 G5	v21 G6	v26 G7	v31 G8	v38 G10	v43 G11	v48 G11	v53 G12	v58 G13	v63 G14	0002 C1	0007 D1	0012 E2	2902 G14	2907 G5	2912 G2	5904 F2	5914 F14	5920 F5	6956 D4	9904 F3	9909 F3	9914 G3	9919 F5	9924 G5	9930 G5	9938 F11	9944 D6	9949 F7	9954 F8	9965 G8
v2 G3	v7 G4	v12 G5	v17 G6	v22 G6	v27 G7	v32 G8	v39 G10	v44 G11	v49 G12	v54 G12	v59 G13	v64 G14	0003 C1	0008 D2	0013 E2	2903 G14	2908 G1	5900 F1	5910 F14	5915 F8	6926 D4	6957 D5	9905 F3	9910 G3	9915 G4	9920 F5	9925 D6	9934 G5	9939 F12	9945 D6	9950 F7	9955 G8	9966 G8
v3 G3	v8 G4	v13 G5	v18 G6	v23 G7	v28 G7	v35 G9	v40 G10	v45 G11	v50 G12	v55 G12	v60 G13	v65 G8	0004 C2	0009 E1	1000 H2	2904 G10	2909 G1	5901 F1	5911 F14	5917 F10	6927 E4	9901 F3	9906 F4	9911 G3	9916 G4	9921 F5	9927 F5	9935 F8	9940 G11	9946 F6	9951 F7	9962 G7	
v4 G3	v9 G4	v14 G5	v19 G6	v24 G7	v29 G8	v36 G9	v41 G10	v46 G11	v51 G12	v56 G13	v61 G13	v71 G12	0005 D1	0010 E1	2900 G14	2905 G8	2910 G1	5902 F2	5912 F9	5918 F9	6928 E4	9902 F3	9907 F4	9912 G3	9917 G4	9922 G5	9928 F6	9936 G8	9941 G11	9947 F6	9952 F7	9963 G7	
v5 G3	v10 G4	v15 G5	v20 G6	v25 G7	v30 G8	v37 G10	v42 G10	v47 G11	v52 G12	v57 G13	v62 G14	0001 C1	0006 D1	0011 E1	2901 G13	2906 G9	2911 G2	5903 F2	5913 F13	5919 F10	6929 E5	9903 F3	9908 F4	9913 G3	9918 G2	9923 G5	9929 F7	9937 F11	9942 G12	9948 F7	9953 F8	9964 G7	

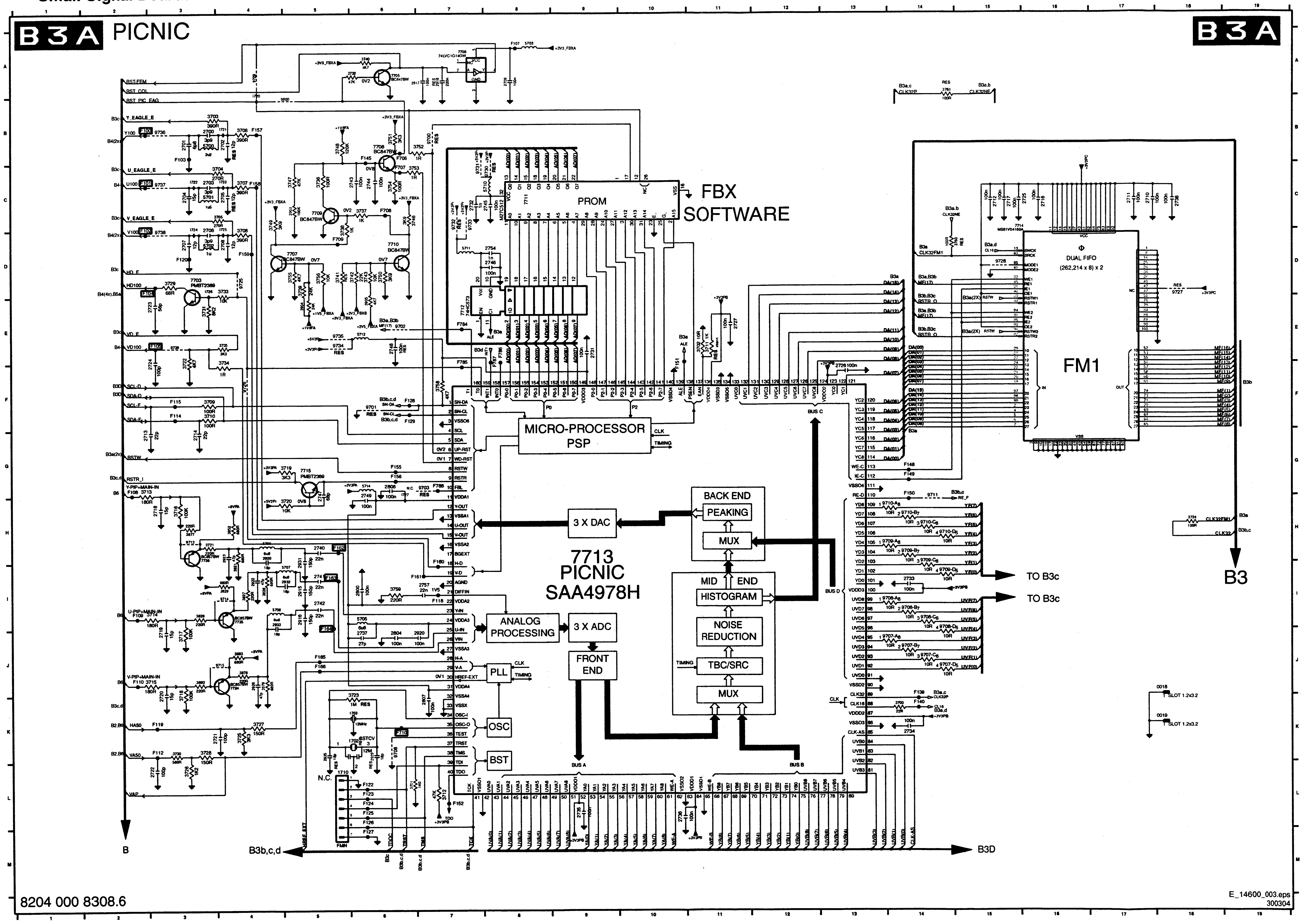

B 1
SIM CONNECTOR (MALE)
B 1
B10
HEADPHONE AMPLIFIER
B6
AUDIO DEMODULATOR
B5
OTC
B4
VDP-HOP
B3
FEATURE-BOX
B2
VDP-HIP
HEADPHONE-L
HEADPHONE-R
SDA-F
SCL-F
SDA-S
SCL-S
L-SC1_AV1-IN
L-SC2_AV2-IN
L-SC2-OUT
L-SC1_AV-OUT
R-SC2_AV2-IN
R-SC2-OUT
R-SC1_AV1-IN
R-SC1_AV-OUT
L-FRONT-IN
R-FRONT-IN
L-CL_VL-OUT
R-CL_VL-OUT
GND-AUD
AUDIO-SL
AUDIO-SW
AUDIO-L
AUDIO-R
NC
SC1-STATUS
P50
STANDBY
IRQ-DIGITAL
PIP-MONO
SOUND-ENABLE
FRONT-DETECT
ON-OFF-LED
RC
KEYBOARD
DEGAUSSING
CUTOFF
GND-RGB-CRT
B-CRT
G-CRT
R-CRT
LINEDRIVE1
GND-LINEDRIVE
FRAMEDRIVE+
FRAMEDRIVE-
EW-DRIVE
HFB_X-RAY-PROT
EHT-INFO
DYN-FASE-COR
TILT
LIGHT-SENSOR
Y-SCAVEM
POR
+8V
BAS316
B-SC1-IN_U-IN
G-SC1-IN_Y-IN
R-SC1_V-IN
FBL-SC1-IN
Y-CVBS-SC2_AV2-IN
C-SC2_SVHS-IN
CVBS-SC2_MON-OUT
CVBS-SC1_AV1-IN
CVBS-TER-OUT
IF-TER
AGC
CVBS-PIP_TUN1-2-CVBS-IN
SEL_SVHS-RR_STATUS2
Y-CVBS-FRONT-IN
C-FRONT-IN
SOLDERLAND
SLOT 1.2x3.2
+5V_CON
+5V_VDP
+5V_AUD
+8V_AUD
+8V_VDP
+3V3_SIM
600R
100n
100p
TO 1205
A8
(SIM CON. FEMALE)
8204 000 8261.4
E_14600_001.eps
220304

Small Signal Board: IF. I/O Video Processing


B2
IF,I/O VIDEOPROCESSING
B2
B
HIP
SUPPLY
CTRL
SYNC
IF DEM
GROUP DELAY COR.
I/O SWITCH
LUMA & CHROMA PROC.
OUTP SWITCH
7323 TDA9320H
7307 TDA9181
1409-A OFWK3953L SAW-FILTER AUDIO
1410-A OFWK9656L SAW-FILTER-VIDEO
1408-A OFWK3953L SAW-FILTER VIDEO
MODULATOR COIL
COIL 40.4 SUPPRESSION
CLAMP
2H/4H DELAY
ADAPTIVE COMB FILTER
SAND-CASTLE
FILTER TUNING
CLOCK GEN
N.C.
8204 000 8260.5
E_14600_002.eps
300304

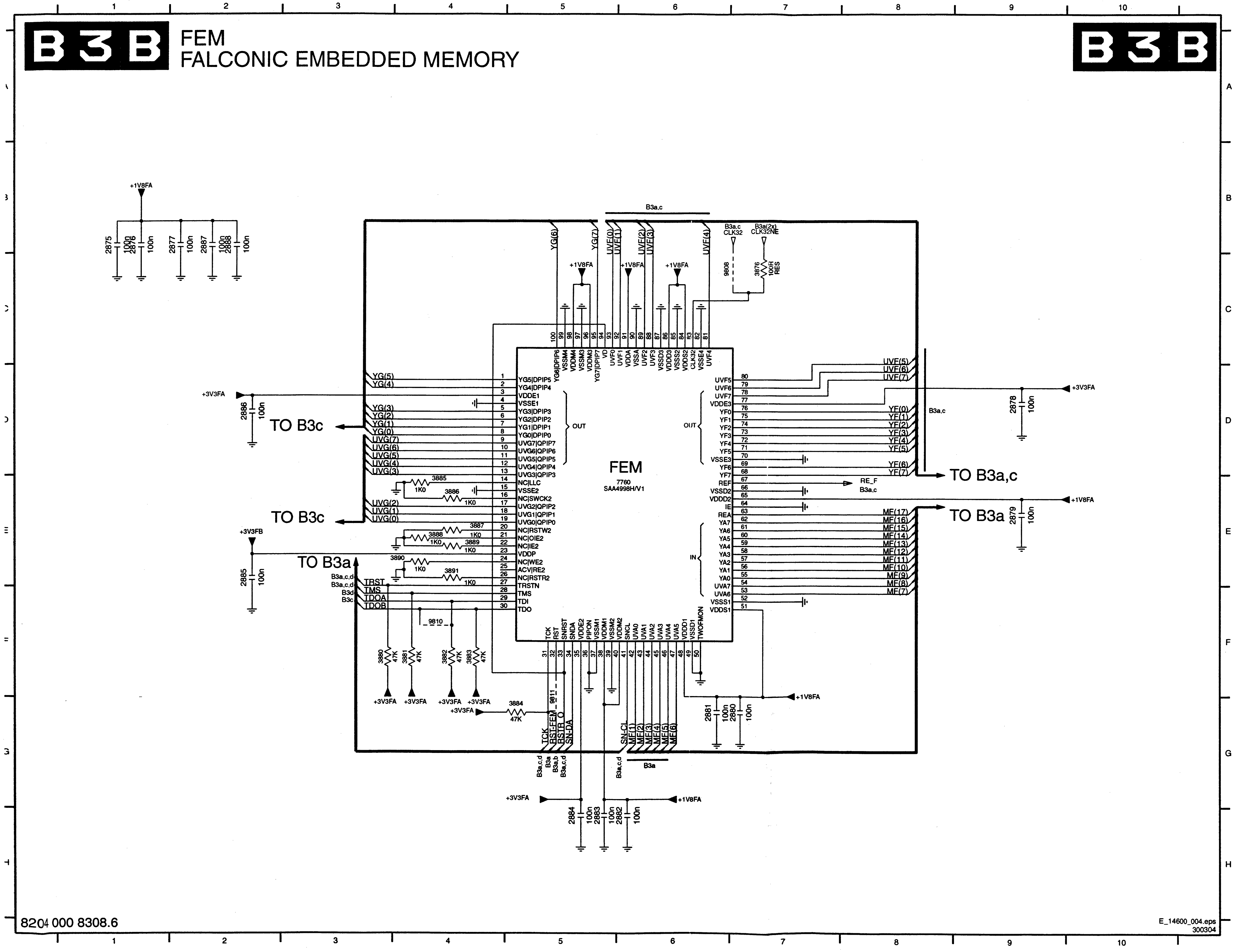
1303	B13
1305	E11
1306	E12
1307	E12
1308	E13
1403	A1
1406	E5
1407	E5
1408-A	F4
1408-B	G3
1409-A	B4
1409-B	C3
1410-A	E4
1410-B	E3
1411	G6
2302	H14
2305	C11
2316	C11
2322	C11
2327	D12
2335	G9
2337	G9
2339	H8
2350	A11
2351	A11
2352	A11
2353	I12
2354	G12
2355	C12
2356	F11
2357	F11
2358	F11
2359	F11
2360	F12
2361	F13
2362	F13
2364	C12
2365	F7
2366	F8
2367	F8
2368	F8
2369	F8
2370	F8
2371	B10
2372	A10
2373	B8
2374	B8
2375	B8
2376	B7
2377	B6
2378	B7
2379	F12
2380	F12
2381	F12
2382	F12
2383	D12
2384	F7
2385	G13
2387	H8
2388	A11
2389	B12
2390	B1
2391	B3
2394	B6
2399	F7
2401	C6
2402	G7
2403	C7
2404	C7
2405	D1
2406	G2
2407	G3
2408	H3
2409	C7
2411	C6
2412	C1
2413	D5
2417	E7
2418	D7
2419	D7
2420	F8
2421	F14
2422	E13
2423	F14
2424	G11
2425	B1
2426	C13
2427	C14
2428	C14
2430	F9
3301	I12
3303	H10
3370	F9
3371	H9
3372	H9
3373	C12
3374	C12
3375	C12
3376	A10
3377	A10
3378	B10
3379	D11
3380	B7
3381	H8
3382	F7
3385	G7
3389	F9
3393	F11
3400	B6
3401	B7
3402	B1
3403	G7
3404	I6
3405	H5
3406	G2
3407	F2
3408	B5
3409	G2
3410	E3
3411	C2
3412	E12
3413	F9
3414	D2
3415	A5
3416	D5
3417	G5
3418	C7
3419	D5
3420	G6
3421	F5
3422	G9
3423	H1
3433	G1
3434	E2
3435	G5
3436	E6
3437	D7
3439	E6
3441	B5
3444	B11
3445	F6
3446	G8
3447	B11
3448	B12
3449	B12
3450	E14
3451	F14
3452	F14
3456	G5
3457	H5
3460	D13
3461	D14
3462	D14
3463	B5
3468	H11
3473	F7
3474	F6
3475	C11
5309	B14
5310	B14
5311	B14
5312	F14
5401	D3
5402	E5
5403	H2
5404	B7
5405	B7
5406	E6
5408	C6
5409	H8
5411	C1
5415	A2
5416	A3
5417	G7
6402	E2
6403	D2
6404	G2
6405	E2
7307	G11
7320	F9
7322	E7
7323	D9
7401	E2
7402	H7
7403	D2
7404	D12
7405	H1
7406	F5
7407	F5
7408	A12
7409	A12
7410	G5
7411	D6
7412	F14
7413	D13
9318	G11
9319	G11
9322	F8
9324	G11
9401	F3
9402	E3
9403	E2
9405	E2
9406	F13
9407	A4
9408	H7
9410	A4
9412	F6
9413	F6
9414	E7
9415	C3
9416	D5
9417	D6
9418	E5
9419	E7
9420	F6
F354	B14
F355	B14
F356	B14
F400	G3
F401	D7
F402	C7
F403	C7
F404	E12
F405	D11
F406	D12
F407	B10
F408	B11
F409	C5
F410	C5
F411	C4
F412	C4
F413	B6
F414	D5
F415	H8
F416	C1
F417	F8
F418	G8
F419	B7
F420	B7
F421	B8
F422	B8
F423	H9
F424	E14
F425	F14
F426	F14
F427	F14
F428	F13
F430	H14
F431	H14
F432	H12
F433	H11
F434	G11
F435	H11
F436	D6
F437	C1
F438	B2
F439	E6
F440	B8
c002	A8

Small Signal Board: PICNIC


B3A
PICNIC
B3A
FBX SOFTWARE
PROM
MICRO-PROCESSOR PSP
CLK
TIMING
BACK END
PEAKING
MUX
3 X DAC
7713
PICNIC
SAA4978H
MID
END
HISTOGRAM
NOISE REDUCTION
TBC/SRC
TIMING
MUX
ANALOG PROCESSING
3 X ADC
FRONT END
PLL
OSC
BST
BUS A
BUS B
BUS C
BUS D
DUAL FIFO
(262,214 x 8) x 2
FM1
TO B3c
TO B3c
B3
B3b
B3b,c,d
B3D
B
RST-FEM
RST_COL
RST_PIC_EAG
Y_EAGLE_E
U_EAGLE_E
V_EAGLE_E
HD_E
VD_E
SCL-D
SDA-D
SCL-F
SDA-F
RSTW
RSTR_I
V-PIP+MAIN-IN
U-PIP+MAIN-IN
HA50
VA50
VAP
BC847BW
BC857BW
PMBT2369
74LVC1G14GW
M27C512
74HC573
+3V3_FBXA
SLOT 1.2x3.2
0018
0019
8204 000 8308.6
E_14600_003.eps
300304

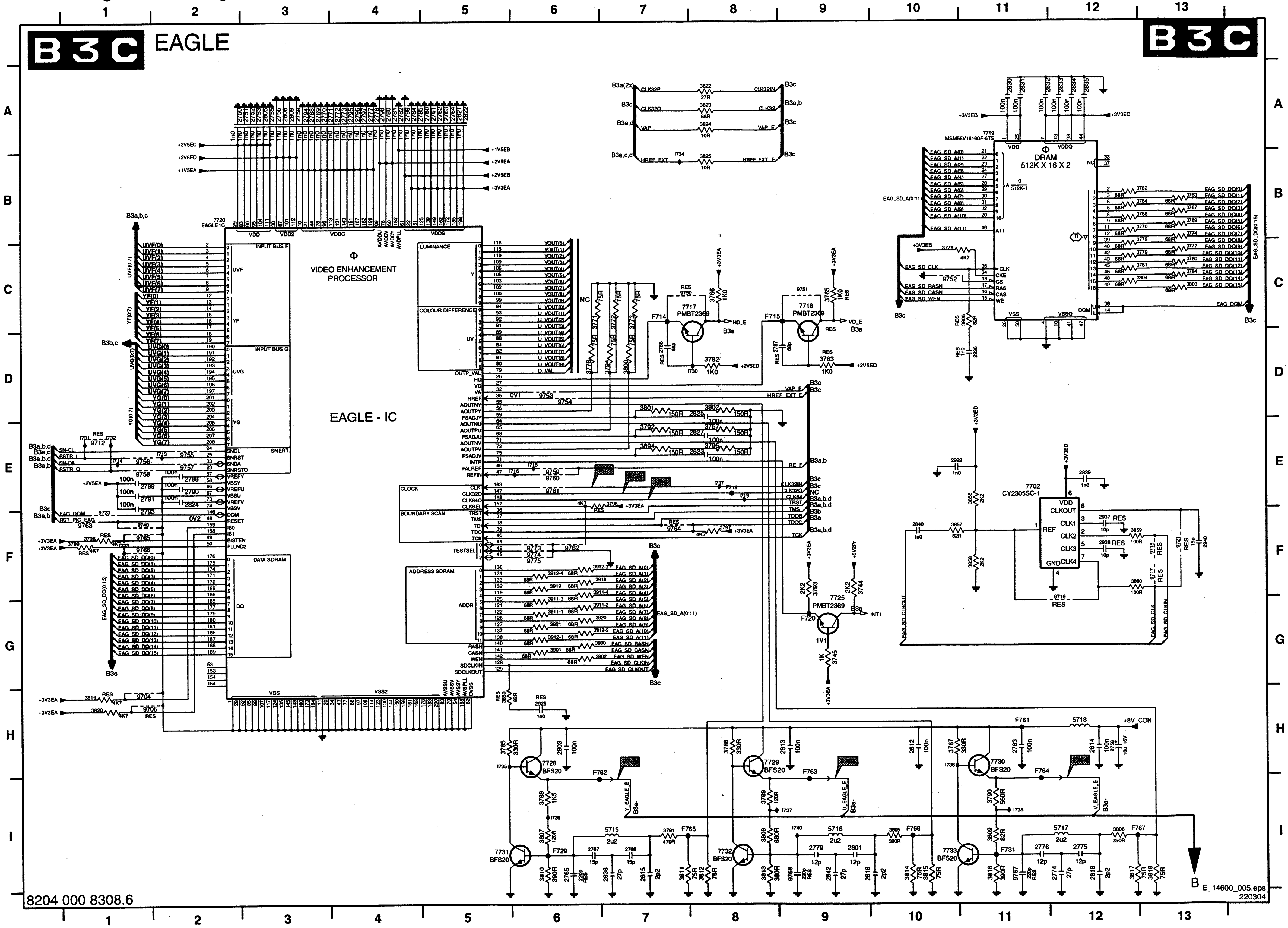
0018	J18
0019	K18
1702	K6
1703	K6
1710	L5
2700	B3
2701	B3
2702	B4
2703	C3
2704	C3
2705	C4
2706	D3
2707	D3
2708	D4
2709	A8
2710	C17
2711	C17
2712	C15
2713	G2
2714	G3
2716	C16
2717	C15
2718	H3
2719	J3
2720	J3
2721	K3
2722	L3
2723	E3
2724	E3
2725	C16
2726	F13
2727	E11
2731	E9
2732	C7
2733	I14
2734	K14
2735	L9
2736	L10
2737	J6
2738	C18
2740	H5
2741	I5
2742	I5
2743	C6
2744	C6
2745	C8
2746	D8
2747	G5
2748	E6
2749	H6
2754	D8
2757	I7
2800	I6
2804	J6
2806	G6
2807	K7
2915	I5
2916	I5
2917	A7
2918	A7
2920	J7
2922	I4
2923	H4
2926	J4
2929	K6
2930	H4
2931	H5
2932	I5
2933	I4
2935	K5
3700	K14
3701	L6
3702	E11
3703	B3
3704	C4
3705	C4
3706	B4
3707	C4
3708	D4
3709	F3
3710	F3
3711	E11
3712	L7
3713	G2
3714	I3
3715	J3
3716	H3
3717	J3
3718	J3
3719	G5
3720	H5
3721	H3
3722	E3
3723	K6
3724	H18
3725	K4
3726	L3
3727	K4
3728	K3
3729	D3
3730	K3
3731	E3
3732	A6
3733	D4
3734	E4
3735	E4
3736	C5
3737	C6
3738	C5
3739	D5
3740	A6
3741	D5
3742	D6
3743	D6
3746	C6
3747	C5
3748	B5
3749	C4
3750	D6
3751	B6
3752	B7
3753	C6
3754	C6
3755	D5
3756	D5
3758	F7
3759	I6
3760	D15
3761	A14
3821	I4
3826	I3
3827	I4
3828	I4
3829	I4
3852	H4
3877	H3
3878	J4
3879	J4
3892	J3
3893	J4
3903	C5
3904	E5
3905	E6
5700	B3
5701	C3
5702	D3
5703	A8
5705	I6
5706	H4
5707	I5
5708	I4
5710	C8
5711	D7
5712	E6
5714	G6
7703	D3
7705	A6
7706	A7
7707	D5
7708	B6
7709	C5
7710	D6
7711	C8
7712	E7
7713	I9
7714	C16
7715	G5
7734	J4
7735	I4
7736	H3
9700	B7
9701	F6
9702	E6
9703	G7
9706	K6
9707-A	J14
9707-B	J14
9707-C	J14
9707-D	J14
9708-A	I14
9708-B	I14
9708-C	I14
9708-D	J14
9709-A	H14
9709-B	H14
9709-C	I14
9709-D	I14
9710-A	H14
9710-B	H14
9710-C	H14
9710-D	H14
9711	H14
9713	H3
9714	I4
9715	J4
9725	D4
9726	F4
9727	D18
9728	D15
9729	A4
9730	C8
9731	C7
9732	C7
9733	C7
9734	E5
9735	E5
9736	B3
9737	C3
9738	D3
9739	E3
9809	B5
F100	B2
F101	C2
F102	D2
F103	B3
F104	D3
F105	E3
F107	A8
F108	G2
F109	I2
F110	J2
F112	K3
F114	F3
F115	F3
F118	I7
F119	K3
F120	D3
F122	L6
F123	L6
F124	L6
F125	L6
F126	L6
F127	M6
F128	F6
F129	F6
F139	K14
F140	K14
F145	B6
F148	G14
F149	G14
F150	H14
F151	F10
F152	L7
F155	G6
F156	G6
F157	B4
F158	C4
F159	D4
F160	I7
F161	I7
F162	H5
F163	I5
F164	J5
F165	J5
F166	J5
F706	B6
F707	C6
F708	C6
F709	D6
F710	K6
F784	E7
F785	F7
F786	E8
F787	E8
F788	G7
I720	A4
I721	B4
I722	C3
I723	C4
I724	C3
I725	C4
I726	D3
I727	G6

Small Signal Board: FEM Falconic Embedded Memory


B3B
FEM
FALCONIC EMBEDDED MEMORY
B3B
FEM
7760
SAA4998H/V1
OUT
OUT
IN
TO B3c
TO B3c
TO B3a
TO B3a,c
TO B3a
B3a,c
B3a
+1V8FA
+3V3FA
+3V3FB
CLK32
CLK32NE
RE_F
2875
2876
2877
2887
2888
2886
2885
2878
2879
2880
2881
2882
2883
2884
100n
3876
100R
RES
9808
9810
9811
3880
3881
3882
3883
3884
47K
3885
3886
3887
3888
3889
3890
3891
1K0
TRST
TMS
TDOA
TDOB
TCK
RST-FEM
RSTR_O
SN-DA
SN-CL
YG(0)
YG(1)
YG(2)
YG(3)
YG(4)
YG(5)
YG(6)
YG(7)
UVG(0)
UVG(1)
UVG(2)
UVG(3)
UVG(4)
UVG(5)
UVG(6)
UVG(7)
UVF(0)
UVF(1)
UVF(2)
UVF(3)
UVF(4)
UVF(5)
UVF(6)
UVF(7)
YF(0)
YF(1)
YF(2)
YF(3)
YF(4)
YF(5)
YF(6)
YF(7)
MF(1)
MF(2)
MF(3)
MF(4)
MF(5)
MF(6)
MF(7)
MF(8)
MF(9)
MF(10)
MF(11)
MF(12)
MF(13)
MF(14)
MF(15)
MF(16)
MF(17)
8204 000 8308.6
E_14600_004.eps
300304

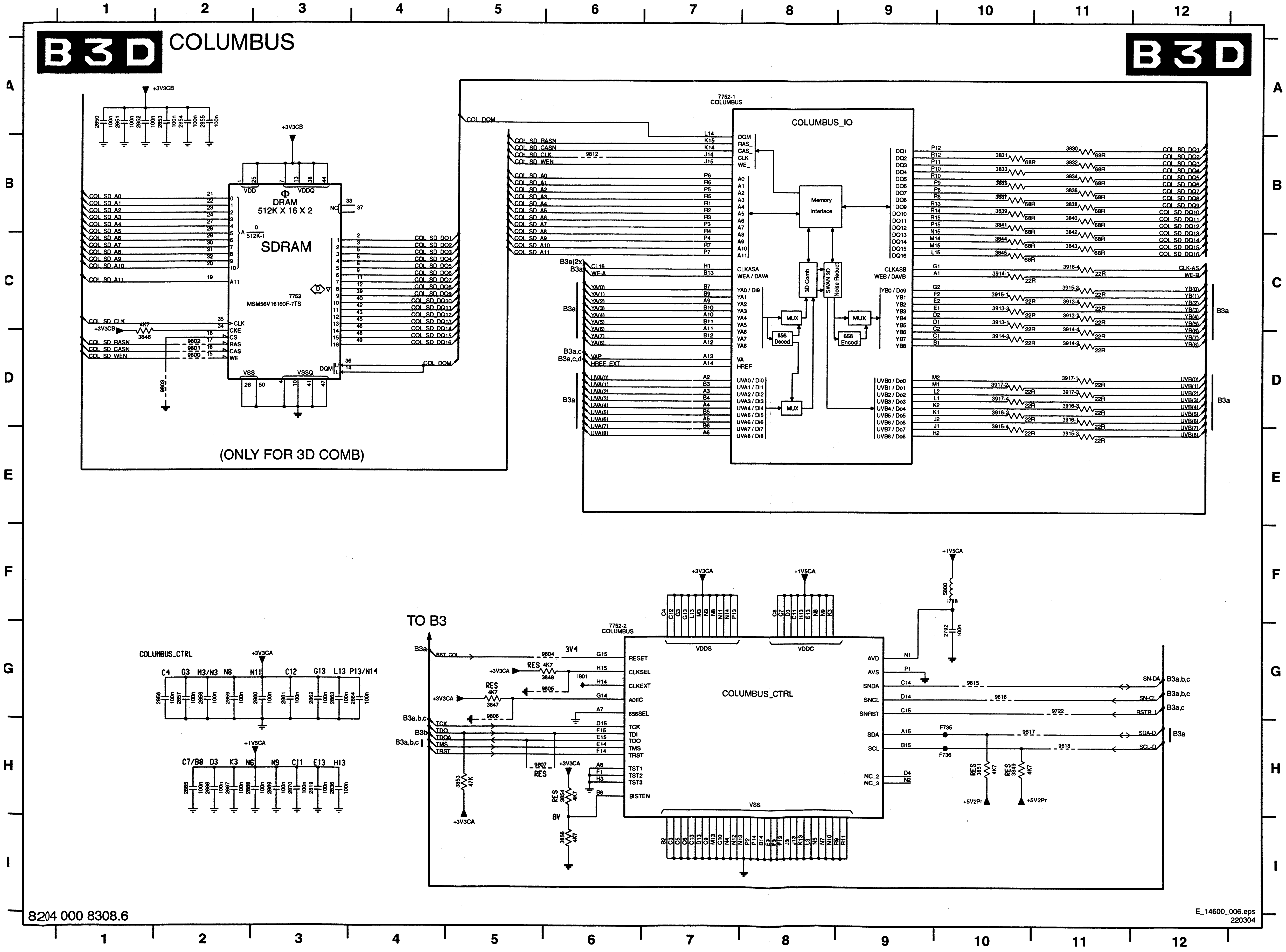
2875	B1
2876	B1
2877	B2
2878	D9
2879	E9
2880	G7
2881	G6
2882	H6
2883	H5
2884	H5
2885	E2
2886	D2
2887	B2
2888	B2
3876	C7
3880	F3
3881	F4
3882	F4
3883	F4
3884	G5
3885	E4
3886	E4
3887	E4
3888	E4
3889	E4
3890	E4
3891	E4
7760	E6
9808	C6
9810	F4
9811	G5

Small Signal Board: Eagle


B3C
EAGLE
B3C
VIDEO ENHANCEMENT PROCESSOR
EAGLE - IC
7720
EAGLE1C
INPUT BUS F
INPUT BUS G
UVF
YF
UVG
YG
LUMINANCE
COLOUR DIFFERENCE
CLOCK
BOUNDARY SCAN
DATA SDRAM
ADDRESS SDRAM
DQ
ADDR
VSS
VSS2
7719
MSM56V16160F-8TS
DRAM
512K X 16 X 2
7717
PMBT2369
7718
PMBT2369
7725
PMBT2369
7702
CY2305SC-1
7728
BFS20
7729
BFS20
7730
BFS20
7731
BFS20
7732
BFS20
7733
BFS20
+8V_CON
EAG_SD_A(0:11)
EAG_SD_DQ(0:15)
V_EAGLE_E
8204 000 8308.6
E_14600_005.eps
220304

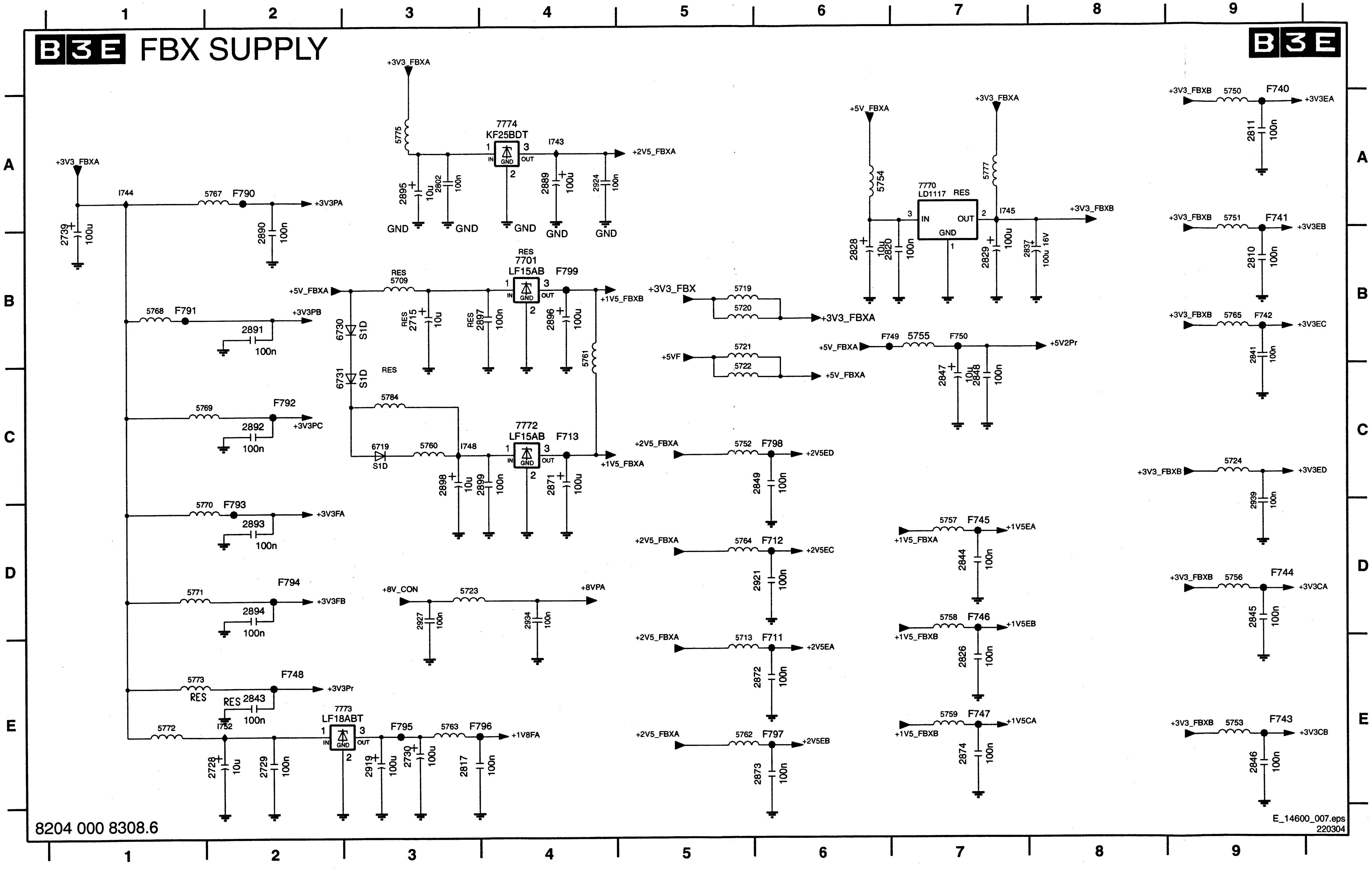
Ref	Pos
2750	A2
2751	A3
2752	A3
2753	A3
2755	A3
2756	A3
2758	H12
2759	A3
2760	A5
2761	A5
2762	A5
2763	A5
2764	A5
2765	I6
2766	I7
2767	I6
2768	A3
2769	A3
2770	A3
2771	A4
2772	A4
2773	A4
2774	I12
2775	I12
2776	I11
2777	A4
2778	A4
2779	I9
2780	A4
2781	A4
2782	A4
2783	H11
2784	A4
2785	A4
2786	D7
2787	D8
2788	E2
2789	E1
2790	E2
2791	E1
2793	E1
2794	A3
2795	A4
2796	A4
2797	A4
2798	A4
2799	A4
2801	I9
2803	H6
2805	A3
2808	A3
2809	A3
2812	H10
2813	H9
2814	H12
2815	I7
2816	I9
2818	I12
2821	A5
2822	A5
2823	E8
2824	E2
2825	D8
2827	E8
2830	A11
2831	A11
2832	A11
2833	A12
2834	A12
2835	A12
2838	I7
2839	E12
2840	F10
2842	I9
2925	H6
2928	E10
2936	D11
2937	F12
2938	F12
2940	F13
3744	F9
3745	G9
3757	E8
3762	B13
3763	B13
3764	B13
3765	C9
3766	C8
3767	B13
3768	B13
3769	B13
3770	B13
3771	C6
3772	C7
3773	C7
3774	B13
3775	C13
3776	D6
3777	C13
3778	C10
3779	C13
3780	C13
3781	C13
3782	D8
3783	D9
3784	C13
3785	H5
3786	H8
3787	H10
3788	I6
3789	I8
3790	I11
3791	I7
3792	E7
3793	F9
3794	D7
3795	E8
3796	E7
3797	F8
3798	F1
3799	F1
3800	D7
3801	D7
3802	D8
3803	C13
3804	C13
3805	I10
3806	I12
3807	I6
3808	I8
3809	I11
3810	I6
3811	I7
3812	I8
3813	I8
3814	I10
3815	I10
3816	I11
3817	I12
3818	I13
3819	H1
3820	H1
3822	A8
3823	A8
3824	A8
3825	B8
3850	H5
3856	E11
3857	F10
3858	F11
3859	F12
3860	F12
3894	E7
3900	G6
3901	G6
3902	G7
3906	C11
3911-1	G6
3911-2	G7
3911-3	G6
3911-4	F7
3912-1	G6
3912-2	G7
3912-3	F7
3912-4	F6
3918	F7
3919	F6
3920	G7
3921	G6
5715	I7
5716	I9
5717	I12
5718	H12
7702	E11
7717	C8
7718	C9
7719	A11
7720	B2
7725	G9
7728	H6
7729	H8
7730	H11
7731	I5
7732	I8
7733	I10
9704	H1
9705	H1
9712	E1
9716	G12
9717	F13
9718	F13
9721	F13
9723	F1
9740	F1
9750	C7
9751	C9
9752	C10
9753	D6
9754	D6
9755	E2
9756	E1
9757	E2
9758	E1
9759	E6
9760	E6
9761	E6
9762	F6
9763	F1
9764	F7
9765	F1
9766	F1
9767	I11
9768	I9
9773	F6
9774	F6
9775	F6
F714	C7
F715	C8
F718	E8
F720	G9
F729	I6
F731	I11
F761	H11
F762	H6
F763	H9
F764	H11
F765	I7
F766	I10
F767	I12
I713	E2
I714	E1
I715	E6
I716	E6
I717	E8
I719	E8
I730	D8
I731	E1
I732	E1
I733	F1
I734	B7
I735	H5
I736	H10
I737	I9
I738	I11
I739	I6
I740	I9

Small Signal Board: Columbus


B3D
COLUMBUS
B3D
+3V3CB
SDRAM
DRAM
512K X 16 X 2
7753
MSM56V16160F-7TS
VDD
VDDQ
VSS
VSSQ
DQM
COL_SD_CLK
COL_SD_RASN
COL_SD_CASN
COL_SD_WEN
COL_DQM
(ONLY FOR 3D COMB)
7752-1
COLUMBUS
COLUMBUS_IO
Memory Interface
3D Comb
SWAN 3D Noise Reduc
MUX
656 Decod
656 Encod
CLKASA
WEA / DAVA
CLKASB
WEB / DAVB
HREF
B3a
B3a,c
B3a,c,d
TO B3
COLUMBUS_CTRL
7752-2
COLUMBUS
VDDS
VDDC
VSS
RESET
CLKSEL
CLKEXT
A0IIC
656SEL
TCK
TDI
TDO
TMS
TRST
TST1
TST2
TST3
BISTEN
AVD
AVS
SNDA
SNCL
SNRST
SDA
SCL
NC_2
NC_3
+3V3CA
+1V5CA
+5V2Pr
3V4
0V
RES
B3a,b,c
B3b
SN-DA
SN-CL
RSTR
SDA-D
SCL-D
8204 000 8308.6
E_14600_006.eps
220304

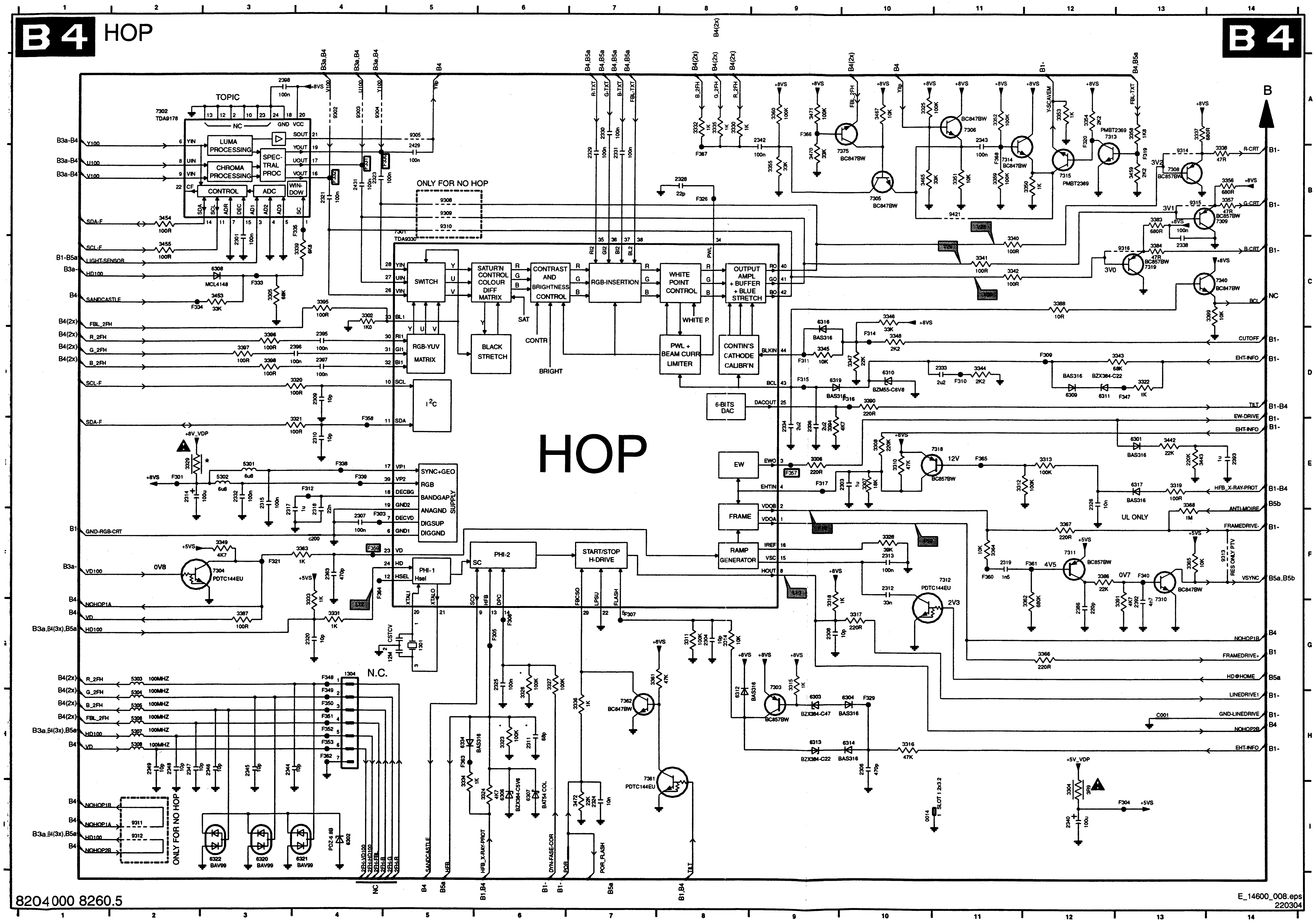
2792	G10
2819	H3
2836	H3
2850	A1
2851	A1
2852	A1
2853	A2
2854	A2
2855	A2
2856	G2
2857	G2
2858	G2
2859	G2
2860	G3
2861	G3
2862	G3
2863	G3
2864	G4
2865	H2
2866	H2
2867	H2
2868	H2
2869	H3
2870	H3
3830	B11
3831	B10
3832	B11
3833	B11
3834	B10
3835	B11
3836	B11
3837	B10
3838	B11
3839	B10
3840	B11
3841	B11
3842	C10
3843	C11
3844	C11
3845	C10
3846	D1
3847	G5
3848	G6
3849	H10
3851	H10
3853	H5
3854	H6
3855	I6
3913-1	C10
3913-2	C10
3913-3	C10
3913-4	C10
3914-1	C10
3914-2	D10
3914-3	D10
3914-4	D10
3915-1	C10
3915-2	C10
3915-3	E10
3915-4	E10
3916-1	D10
3916-2	D10
3916-3	D10
3916-4	C10
3917-1	D10
3917-2	D10
3917-3	D10
3917-4	D10
5800	F10
7752-1	A7
7752-2	G6
7753	C3
9722	G11
9800	D2
9801	D2
9802	D2
9803	D2
9804	G6
9805	G6
9806	H5
9807	H5
9812	B6
9815	G10
9816	G10
9817	H10
9818	H11
F735	H10
F736	H10
I718	F10
I801	G6

Small Signal Board: FBX Supply


B3E FBX SUPPLY
B3E
1 2 3 4 5 6 7 8 9
A B C D E
+3V3_FBXA
2739 100u
I744
5767 F790 +3V3PA
2890 100n
5768 F791 +3V3PB
2891 100n
5769 F792 +3V3PC
2892 100n
5770 F793 +3V3FA
2893 100n
5771 F794 +3V3FB
2894 100n
5773 RES F748 +3V3Pr
RES 2843 100n
5772 I752
2728 10u
2729 100n
7773 LF18ABT
IN GND OUT
F795 5763 F796 +1V8FA
2919 100u
2730 100u
2817 100n
+3V3_FBXA
5775
7774 KF25BDT
I743 +2V5_FBXA
2895 10u
2802 100n
2889 100u
2924 100n
GND GND GND GND GND
+5V_FBXA
RES 5709
RES 7701 LF15AB F799
+1V5_FBXB
RES 2715 10u
RES 2897 100n
2896 100u
6730 S1D
6731 S1D
RES
5761
5784
7772 LF15AB F713
6719 S1D 5760 I748
+1V5_FBXA
2898 10u
2899 100n
2871 100u
+8V_CON 5723 +8VPA
2927 100n
2934 100n
+3V3_FBX 5719 5720 +3V3_FBXA
+5VF 5721 5722 +5V_FBXA
+2V5_FBXA 5752 F798 +2V5ED
2849 100n
+2V5_FBXA 5764 F712 +2V5EC
2921 100n
+2V5_FBXA 5713 F711 +2V5EA
2872 100n
+2V5_FBXA 5762 F797 +2V5EB
2873 100n
+5V_FBXA
5754
+3V3_FBXA
5777
7770 LD1117 RES
IN OUT GND
I745 +3V3_FBXB
2828 10u
2820 100n
2829 100u
2837 100u 16V
+5V_FBXA F749 5755 F750 +5V2Pr
2847 10u
2848 100n
+1V5_FBXA 5757 F745 +1V5EA
2844 100n
+1V5_FBXB 5758 F746 +1V5EB
2826 100n
+1V5_FBXB 5759 F747 +1V5CA
2874 100n
+3V3_FBXB 5750 F740 +3V3EA
2811 100n
+3V3_FBXB 5751 F741 +3V3EB
2810 100n
+3V3_FBXB 5765 F742 +3V3EC
2841 100n
+3V3_FBXB 5724 +3V3ED
2939 100n
+3V3_FBXB 5756 F744 +3V3CA
2845 100n
+3V3_FBXB 5753 F743 +3V3CB
2846 100n
8204 000 8308.6
E_14600_007.eps
220304

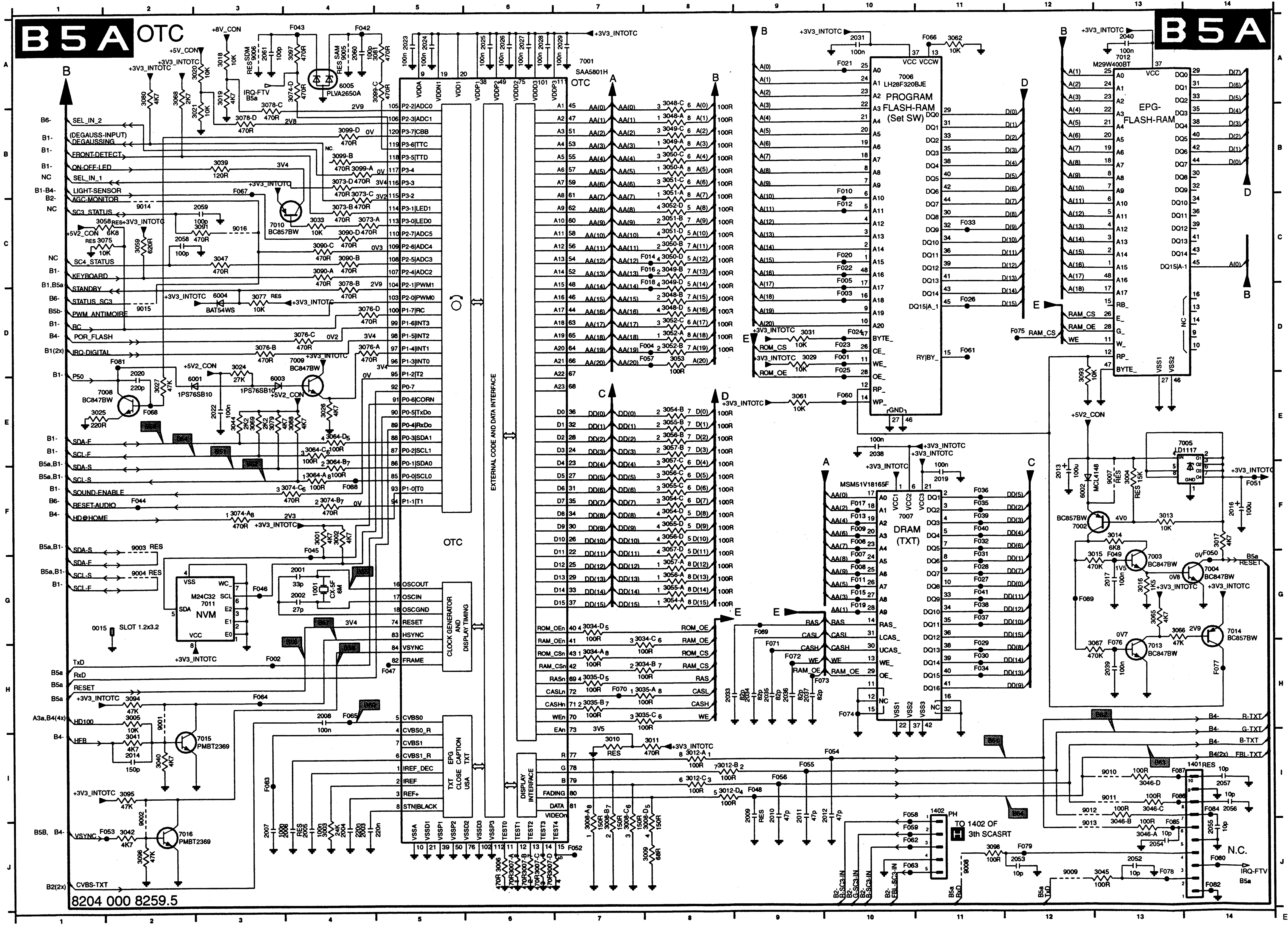
2715	B3
2728	E2
2729	E2
2730	E3
2739	B1
2802	A3
2810	B9
2811	A9
2817	E3
2820	B7
2826	E7
2828	B6
2829	B7
2837	B8
2841	B9
2843	E2
2844	D7
2845	D9
2846	E9
2847	C7
2848	C7
2849	C6
2871	C4
2872	E6
2873	E6
2874	E7
2889	A4
2890	B2
2891	B2
2892	C2
2893	D2
2894	D2
2895	A3
2896	B4
2897	B4
2898	C3
2899	C4
2919	E3
2921	D6
2924	A4
2927	D3
2934	D4
2939	D9
5709	B3
5713	E5
5719	B5
5720	B5
5721	B5
5722	C5
5723	D3
5724	C9
5750	A9
5751	A9
5752	C5
5753	E9
5754	A6
5755	B7
5756	D9
5757	D7
5758	D7
5759	E7
5760	C3
5761	B4
5762	E5
5763	E3
5764	D5
5765	B9
5767	A2
5768	B1
5769	C1
5770	D1
5771	D1
5772	E1
5773	E1
5775	A3
5777	A7
5784	C3
6719	C3
6730	B3
6731	C3
7701	B4
7770	A7
7772	C4
7773	E2
7774	A4
F711	E6
F712	D6
F713	C4
F740	A9
F741	A9
F742	B9
F743	E9
F744	D9
F745	D7
F746	D7
F747	E7
F748	E2
F749	B6
F750	B7
F790	A2
F791	B1
F792	C2
F793	D2
F794	D2
F795	E3
F796	E3
F797	E6
F798	C6
F799	B4
I743	A4
I744	A1
I745	A7
I748	C3
I752	E2

Small Signal Board: HOP


B4 HOP
TOPIC
7302 TDA9178
LUMA PROCESSING
CHROMA PROCESSING
SPEC-TRAL PROC
CONTROL
ADC
WIN-DOW
ONLY FOR NO HOP
7301 TDA9330
SWITCH
SATUR'N CONTROL COLOUR DIFF MATRIX
CONTRAST AND BRIGHTNESS CONTROL
RGB-INSERTION
WHITE POINT CONTROL
OUTPUT AMPL + BUFFER + BLUE STRETCH
RGB-YUV MATRIX
BLACK STRETCH
PWL + BEAM CURR LIMITER
CONTIN'S CATHODE CALIBR'N
I²C
6-BITS DAC
HOP
SYNC+GEO
SUPPLY
EW
FRAME
RAMP GENERATOR
PHI-1
PHI-2
START/STOP H-DRIVE
N.C.
UL ONLY
ONLY FOR NO HOP
8204 000 8260.5
E_14600_008.eps
220304

0014	I10	3344	D11	7340	C14
1301	G5	3345	D9	7361	I7
1304	G4	3346	C10	7362	H7
2301	C3	3347	D10	7375	B10
2303	E10	3348	D10	9302	A4
2304	G8	3349	F3	9303	A4
2306	H10	3350	B12	9304	A4
2307	F4	3351	B11	9305	A5
2308	G9	3352	A11	9308	B5
2309	D4	3353	A12	9309	B5
2310	E4	3354	A12	9310	B5
2311	H6	3355	B9	9311	I2
2312	F10	3356	B14	9312	I2
2313	F10	3357	B14	9313	F14
2314	E2	3358	A13	9314	B13
2315	E3	3359	B11	9315	B13
2317	F3	3360	A9	9316	C13
2318	F4	3361	G7	9421	B11
2319	F11	3362	G12	C001	H13
2320	G4	3363	F4	F301	E2
2321	B4	3364	F11	F303	F4
2323	B4	3365	F13	F304	I13
2324	I7	3366	G12	F305	G6
2325	G6	3367	F12	F306	G6
2326	E12	3368	E13	F307	G7
2328	B8	3383	B13	F309	D12
2329	B7	3384	C13	F310	D11
2330	A7	3386	F12	F311	D9
2331	B7	3387	G3	F312	E4
2332	E3	3388	C12	F314	D10
2333	D11	3390	D10	F315	D9
2334	E9	3391	G13	F316	D10
2336	E9	3394	E9	F317	E9
2338	C13	3395	C4	F319	B13
2340	I12	3396	D3	F320	A12
2342	A9	3397	D3	F321	F3
2343	A11	3398	D3	F326	B8
2344	H3	3399	C14	F329	H10
2345	H3	3442	E13	F330	B4
2346	H3	3443	E13	F331	B4
2347	H2	3453	C3	F332	B4
2348	H2	3454	B2	F333	C3
2349	H2	3455	C2	F334	C2
2363	F4	3459	B13	F335	B3
2386	G12	3465	B10	F338	E4
2392	G13	3467	A10	F339	E4
2393	E14	3470	B9	F340	F13
2395	D4	3471	A9	F347	D13
2396	D4	3472	I7	F348	G4
2397	D4	5301	E3	F349	H4
2398	A3	5302	E3	F350	H4
2429	B5	5303	G2	F351	H4
2431	B4	5304	H2	F352	H4
3302	C4	5305	H2	F353	H4
3304	I12	5306	H2	F357	E9
3305	C3	5307	H2	F358	E4
3306	E9	5308	H2	F359	F4
3307	E10	6301	E13	F360	F11
3308	E10	6302	I4	F361	F12
3310	E10	6303	H9	F362	H4
3311	G8	6304	H10	F363	H5
3312	E11	6306	I6	F364	F4
3313	E12	6307	I6	F365	E11
3314	G8	6308	C3	F366	A9
3315	G9	6309	D12	F367	B8
3316	H10	6310	D10	F368	B11
3317	G10	6311	D12	c200	F4
3318	G9	6312	H8		
3319	E13	6313	H9		
3320	D4	6314	H10		
3321	E4	6316	C9		
3322	D13	6317	E13		
3323	H6	6319	D9		
3324	I6	6320	I3		
3325	A10	6321	I4		
3326	H6	6322	I3		
3327	G6	6334	H5		
3328	F10	7301	B5		
3329	E2	7302	A2		
3330	A8	7303	G9		
3331	G4	7304	F3		
3332	A8	7305	B10		
3333	G4	7306	A11		
3334	I5	7308	B13		
3335	A8	7309	B14		
3336	H7	7310	G13		
3337	A13	7311	F12		
3338	B14	7312	F11		
3339	C4	7313	A13		
3340	C11	7314	B11		
3341	C11	7315	B12		
3342	C11	7318	E11		
3343	D13	7319	C13		

Small Signal Board: OTC Flash


B5A
OTC
7001 SAA5801H OTC
7006 LH28F320BJE PROGRAM FLASH-RAM (Set SW)
7012 M29W400BT EPG-FLASH-RAM
7007 MSM51V18165F DRAM (TXT)
7011 M24C32 NVM
7005 LD1117
EXTERNAL CODE AND DATA INTERFACE
CLOCK GENERATOR AND DISPLAY TIMING
TXT CLOSE CAPTION USA
EPG CAPTION TXT
DISPLAY INTERFACE
1402 PH TO 1402 OF 3th SCASRT
1401 RES
N.C.
8204 000 8259.5

0015	G2
1001	G4
1401	I14
1402	I11
2001	G4
2002	G4
2003	J4
2004	J4
2005	J4
2006	J4
2007	J3
2008	H4
2009	I9
2010	I9
2011	I9
2012	I10
2013	F12
2014	I2
2016	F14
2017	G13
2019	F11
2020	D2
2022	E3
2023	A5
2024	A5
2025	A6
2026	A6
2027	A6
2028	A6
2029	A7
2031	A10
2033	H8
2034	H9
2035	H9
2036	H9
2037	H9
2038	E10
2039	H13
2040	A13
2052	J13
2053	J12
2054	J13
2055	J14
2056	I14
2057	I14
2058	C2
2059	C3
2060	A4
2061	A3
3001	F4
3002	F4
3003	J4
3004	F13
3005	H2
3006	J6
3007-A	J6
3007-B	J6
3007-C	J6
3007-D	J6
3008-A	I7
3008-B	I7
3008-C	I7
3008-D	I8
3009	J8
3010	I7
3011	I8
3012-A	I8
3012-B	I8
3012-C	I8
3012-D	I8
3013	F13
3014	F13
3015	G13
3016	G13
3017	F14
3018	A3
3019	A3
3020	A3
3021	B3
3024	D3
3025	E1
3026	E4
3027	E2
3029	D9
3031	D9
3033	C4
3034-A	H7
3034-B	H8
3034-C	G8
3034-D	G7
3035-A	H8
3035-B	H7
3035-C	H8
3035-D	H7
3039	B3
3040	I2
3041	I2
3042	J2
3044	E3
3045	J13
3046-A	J13
3046-B	J13
3046-C	I13
3046-D	I13
3047	C3
3048-A	B8
3048-B	D8
3048-C	A8
3048-D	D8
3049-A	B8
3049-B	C8
3049-C	B8
3049-D	C8
3050-A	B8
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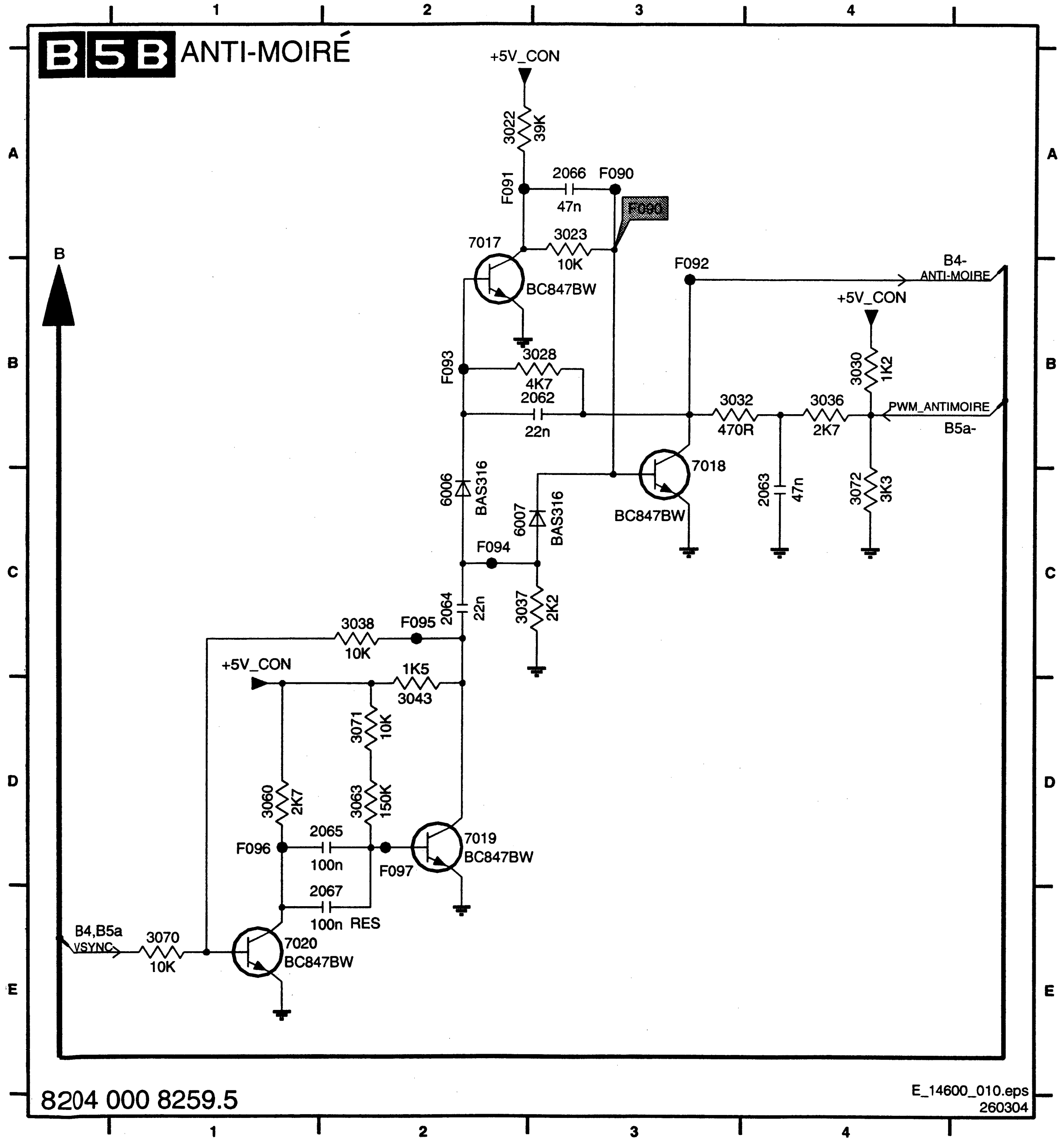
3050-C	B8
3050-D	C8
3051-A	B8
3051-B	C8
3051-C	B8
3051-D	C8
3052-A	D8
3052-B	D8
3052-C	D8
3052-D	C8
3053	D8
3054-A	G8
3054-B	E8
3054-C	F8
3054-D	F8
3055-A	G8
3055-B	E8
3055-C	F8
3055-D	F8
3056-A	G8
3056-B	E8
3056-C	F8
3056-D	F8
3057-A	G8
3057-B	E8
3057-C	E8
3057-D	F8
3058	C2
3059	C2
3061	E9
3062	A11
3064-A	F4
3064-B	E4
3064-C	E4
3064-D	E4
3065	G13
3066	G13
3067	H13
3068	A2
3069	E3
3073-A	C4
3073-B	C4
3073-C	B4
3073-D	B4
3074-A	F3
3074-B	F4
3074-C	F4
3074-D	A4
3075	C2
3076-A	D4
3076-B	D3
3076-C	D4
3076-D	D4
3077	D3
3078-B	C4
3078-C	A3
3078-D	B3
3079	E3
3080	A2
3081	A5
3088	E4
3090-A	C4
3090-B	C4
3090-C	C4
3090-D	C4
3091	C3
3093	E12
3094	H2
3095	I2
3096	J2
3097	A4
3098	J11
3099-A	B4
3099-B	B4
3099-C	A5
3099-D	B4
6001	E3
6002	F12
6003	E3
6004	D3
6005	A4
7001	A7
7002	F12
7003	G13
7004	G14
7005	E14
7006	A10
7007	F10
7008	E2
7009	D4
7010	C4
7011	G3
7012	A13
7013	H13
7014	G14
7015	I3
7016	J2
9001	H2
9002	I2
9003	F2
9004	G2
9005	A4
9006	A3
9007	F13
9008	J11
9009	J12
9010	I13
9011	I13
9012	I12
9013	J12
9014	C2
9015	D2
9016	C3
F001	D10
F002	H3
F003	D10
F004	D8
F005	C10
F006	F10
F007	G10
F008	G10
F009	F10
F010	B10
F011	G10
F012	C10
F013	F10
F014	C8
F015	G10
F016	C8
F017	F10
F018	C8
F019	G10
F020	C10
F021	A10
F022	C10
F023	D10
F024	D10
F025	D10
F026	D11
F027	G11
F028	G11
F029	H11
F030	H11
F031	G11
F032	F11
F033	C11
F034	H11
F035	F11
F036	F11
F037	G11
F038	G11
F039	F11
F040	F11
F041	G11
F042	A4
F043	A4
F044	F2
F045	F4
F046	G3
F047	H5
F048	I9
F049	G13
F050	G14
F051	F14
F052	J7
F053	J2
F054	I10
F055	I9
F056	I9
F057	D8
F058	I10
F059	J10
F060	E10
F061	D11
F062	J10
F063	J10
F064	H3
F065	H4
F066	A11
F067	B3
F068	E2
F069	G9
F070	H7
F071	H9
F072	H9
F073	H9
F074	H10
F075	D12
F076	H13
F077	H14
F078	J13
F079	J12
F080	J14
F081	D2
F082	J14
F083	I3
F084	I14
F085	J13
F086	I13
F087	I13
F088	F4
F089	G12

E_14600_009.eps
220304

Small Signal Board: Anti Moiré

2062	B3
2063	C4
2064	C2
2065	D2
2066	A3
2067	E2
3022	A2
3023	A3
3028	B3
3030	B4
3032	B3
3036	B4
3037	C2
3038	C2
3043	D2
3060	D1
3063	D2
3070	E1
3071	D2
3072	C4
6006	C2
6007	C2
7017	A2
7018	C3
7019	D2
7020	E1
F090	A3
F091	A2
F092	B3
F093	B2
F094	C2
F095	C2
F096	D1
F097	D2

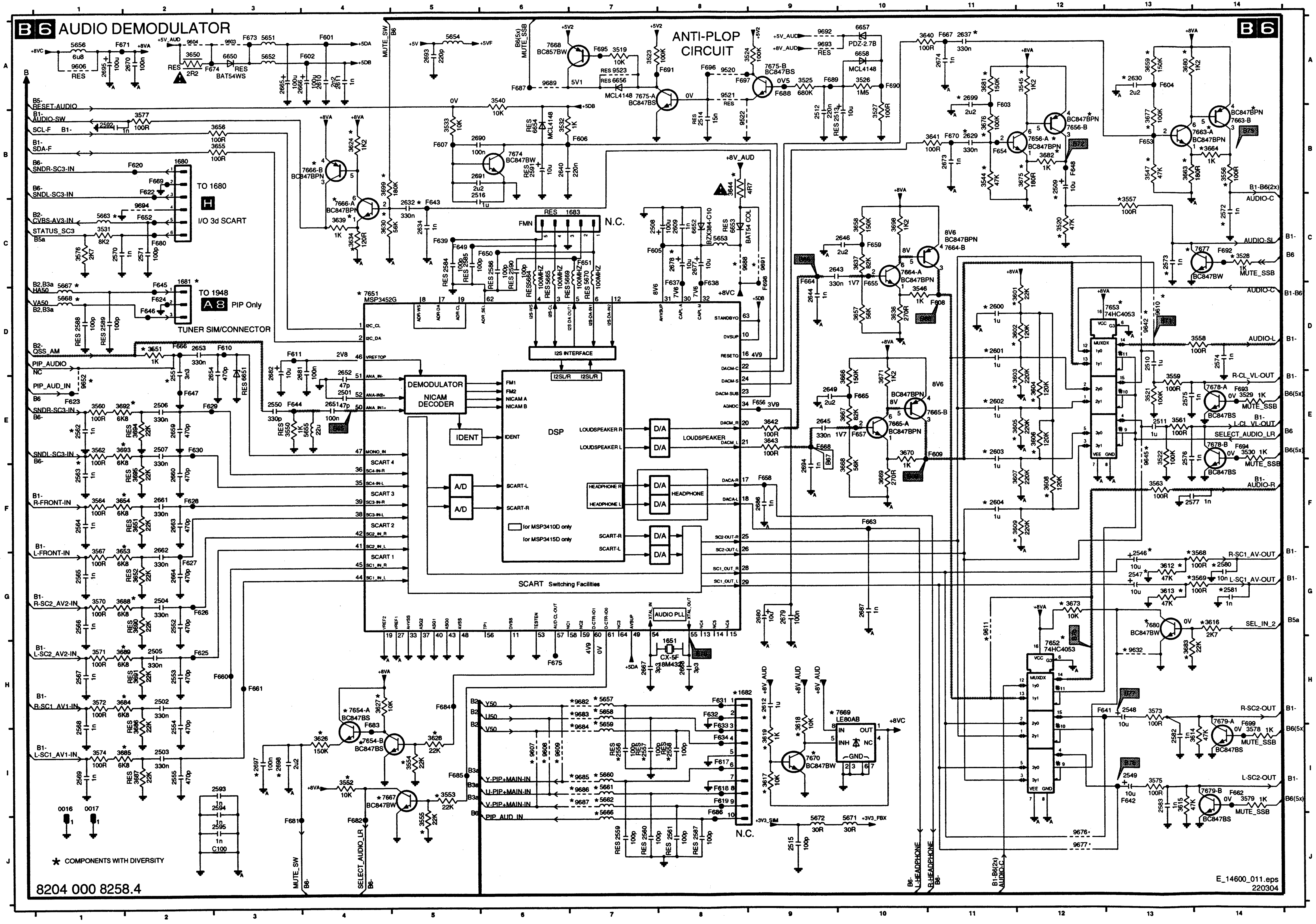


B5B ANTI-MOIRÉ
1
2
3
4
A
B
C
D
E
+5V_CON
3022
39K
F091
2066
F090
47n
F090
3023
10K
7017
BC847BW
F092
B4-
ANTI-MOIRE
+5V_CON
3030
1K2
F093
3028
4K7
2062
22n
3032
470R
3036
2K7
PWM_ANTIMOIRE
B5a-
6006
BAS316
6007
BAS316
7018
BC847BW
2063
47n
3072
3K3
F094
2064
22n
3037
2K2
3038
10K
F095
+5V_CON
1K5
3043
3071
10K
3060
2K7
3063
150K
F096
2065
100n
F097
7019
BC847BW
2067
100n RES
B4,B5a
VSYNC
3070
10K
7020
BC847BW
8204 000 8259.5
E_14600_010.eps
260304

Personal Notes:

E_06532_012.eps
130204

Small Signal Board: Audio Demodulator


B6 AUDIO DEMODULATOR
B6
ANTI-PLOP CIRCUIT
MSP3452G
DEMODULATOR
NICAM DECODER
IDENT
DSP
A/D
D/A
I2S INTERFACE
LOUDSPEAKER
HEADPHONE
SCART Switching Facilities
for MSP3410D only
for MSP3415D only
TO 1680
I/O 3d SCART
TO 1948
A8 PIP Only
TUNER SIM/CONNECTOR
74HC4053
LE80AB
CX-5F 18M432
AUDIO PLL
N.C.
MUTE_SW
SELECT_AUDIO_LR
L-HEADPHONE
R-HEADPHONE
AUDIO-C
AUDIO-SL
AUDIO-L
AUDIO-R
MUTE_SSB
R-CL_VL-OUT
L-CL_VL-OUT
SELECT_AUDIO_LR
R-SC1_AV-OUT
L-SC1_AV-OUT
SEL_IN_2
R-SC2-OUT
L-SC2-OUT
★ COMPONENTS WITH DIVERSITY
8204 000 8258.4
E_14600_011.eps
220304
A
B
C
D
E
F
G
H
I
J
1
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3
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5
6
7
8
9
10
11
12
13
14

0017	I1
1651	H8
1680	B2
1681	C2
1682	H8
1683	C7
2501	E4
2502	H2
2503	I2
2504	G2
2505	H2
2506	E2
2507	E2
2508	C7
2509	B12
2510	D13
2511	E13
2512	B9
2513	B10
2514	B8
2515	J9
2516	C5
2546	G13
2547	G13
2548	H13
2549	I13
2550	E3
2551	D2
2552	G2
2553	H2
2554	H2
2555	I2
2556	I7
2557	I7
2558	I8
2559	J7
2560	J7
2561	J8
2562	E1
2563	F1
2564	F1
2565	G1
2566	G1
2567	H1
2568	H1
2569	I1
2570	C1
2571	C2
2572	C14
2573	C13
2574	D14
2575	E13
2576	E13
2577	F13
2580	G14
2581	G14
2582	I13
2583	I13
2584	C5
2585	C5
2586	C6
2587	J8
2588	D1
2589	D1
2590	C6
2591	B6
2592	B1
2593	I3
2594	I3
2595	J3
2600	D11
2601	D11
2602	E11
2603	E11
2604	F11
2609	C8
2610	A4
2611	A4
2612	H9
2629	B11
2630	A13
2632	C5
2634	C5
2637	A11
2640	B6
2643	C9
2644	D9
2645	E9
2646	C10
2649	E9
2651	E4
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2653	D2
2654	D3
2659	E2
2660	F2
2661	F2
2662	G2
2663	F2
2664	G2
2665	A3
2666	A4
2667	H7
2668	H8
2670	A2
2673	B11
2674	A11
2677	C8
2678	C8
2679	G9
2680	G9
2681	D4
2682	D3
2686	F9
2687	G10
2690	B5
2691	B5
2693	A5
2694	F9
2695	A1
2697	I3
2698	I3
2699	A11
3519	A7
3520	C12
3521	E13
3522	E13
3523	A7
3524	A9
3525	A9
3526	A10
3528	C14
3529	E14
3530	E14
3531	C1
3532	B6
3533	B5
3540	A6
3544	B11
3545	A12
3546	D10
3547	B13
3550	E3
3551	D2
3552	I4
3553	I5
3554	I5
3555	J5
3556	B14
3557	C13
3558	D14
3559	E13
3560	E1
3561	E13
3562	E1
3563	F13
3564	F1
3567	G1
3568	G14
3569	G14
3570	G1
3571	H1
3572	H1
3573	H13
3574	I1
3575	I13
3576	C1
3577	B2
3578	I14
3579	I14
3601	D12
3602	D12
3603	E12
3604	E12
3605	E12
3606	E12
3607	F12
3608	F12
3609	F12
3612	G13
3613	G13
3614	I14
3615	I14
3616	G14
3617	I9
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3624	B4
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3627	H4
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3630	C4
3634	C4
3636	D10
3637	C10
3639	C4
3640	A10
3641	B11
3642	E9
3643	E9
3644	B8
3650	A2
3651	F2
3652	G2
3653	G1
3654	F1
3655	B3
3656	B3
3657	D10
3658	C10
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3667	E10
3668	F10
3669	F10
3670	E10
3671	E10
3673	G12
3675	B12
3676	B11
3677	B13
3680	A13
3681	A11
3682	B12
3683	H13
3684	H1
3685	I1
3686	H2
3687	I2
3688	G1
3689	H1
3690	G2
3691	H2
3692	E1
3693	E2
3694	E2
3695	F2
3698	C10
3699	B4
5651	A3
5652	A3
5653	C8
5654	A5
5655	E4
5656	A1
5657	H7
5658	H7
5659	I7
5660	I7
5661	I7
5662	I7
5663	C1
5664	C6
5665	C6
5666	J7
5667	D1
5668	D1
5669	C7
5670	C7
5671	J10
6650	A3
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6654	B6
6656	A7
6657	A10
6658	A10
7651	D4
7652	H12
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7663-B	B14
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7665-B	E11
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7666-B	B4
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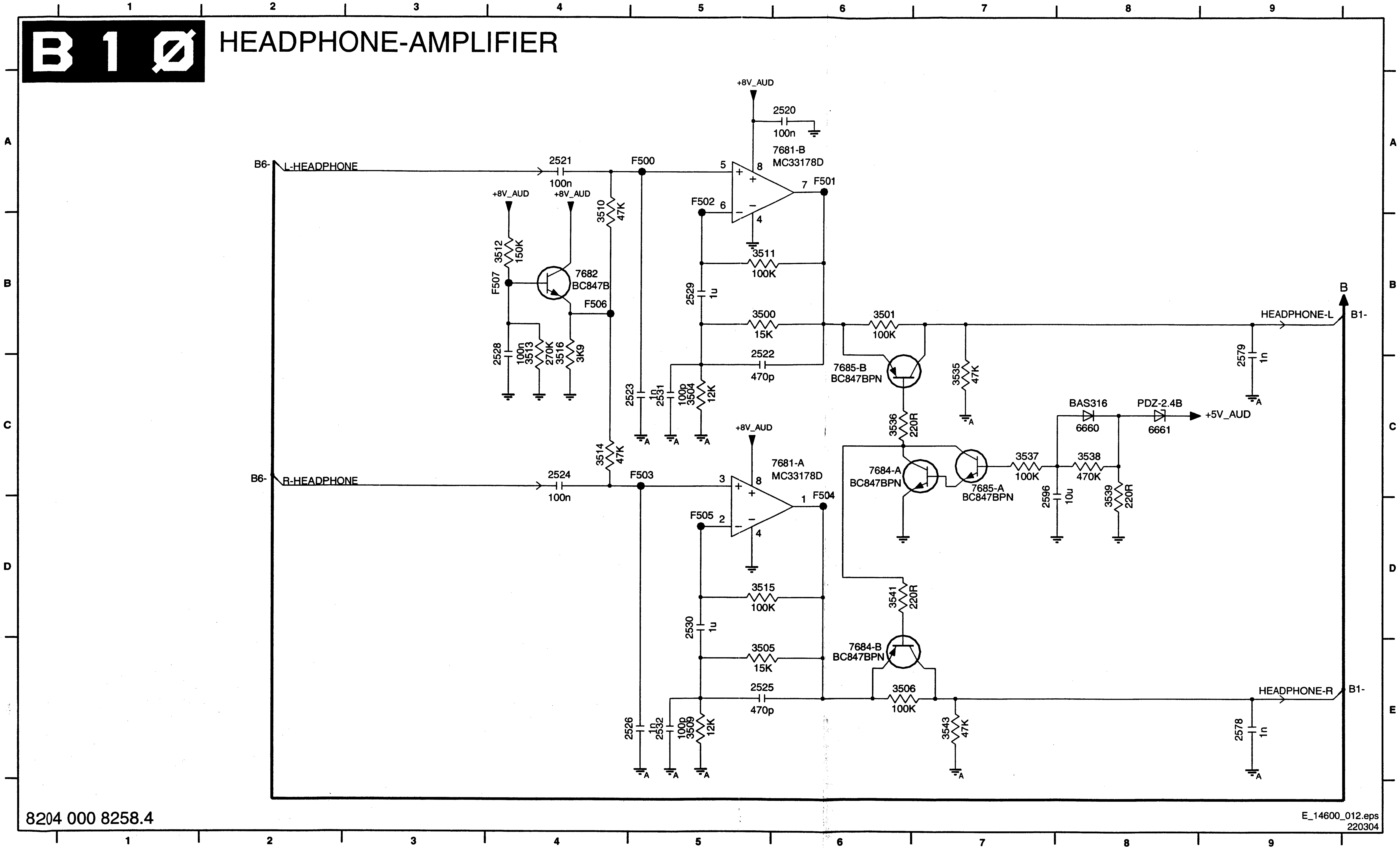
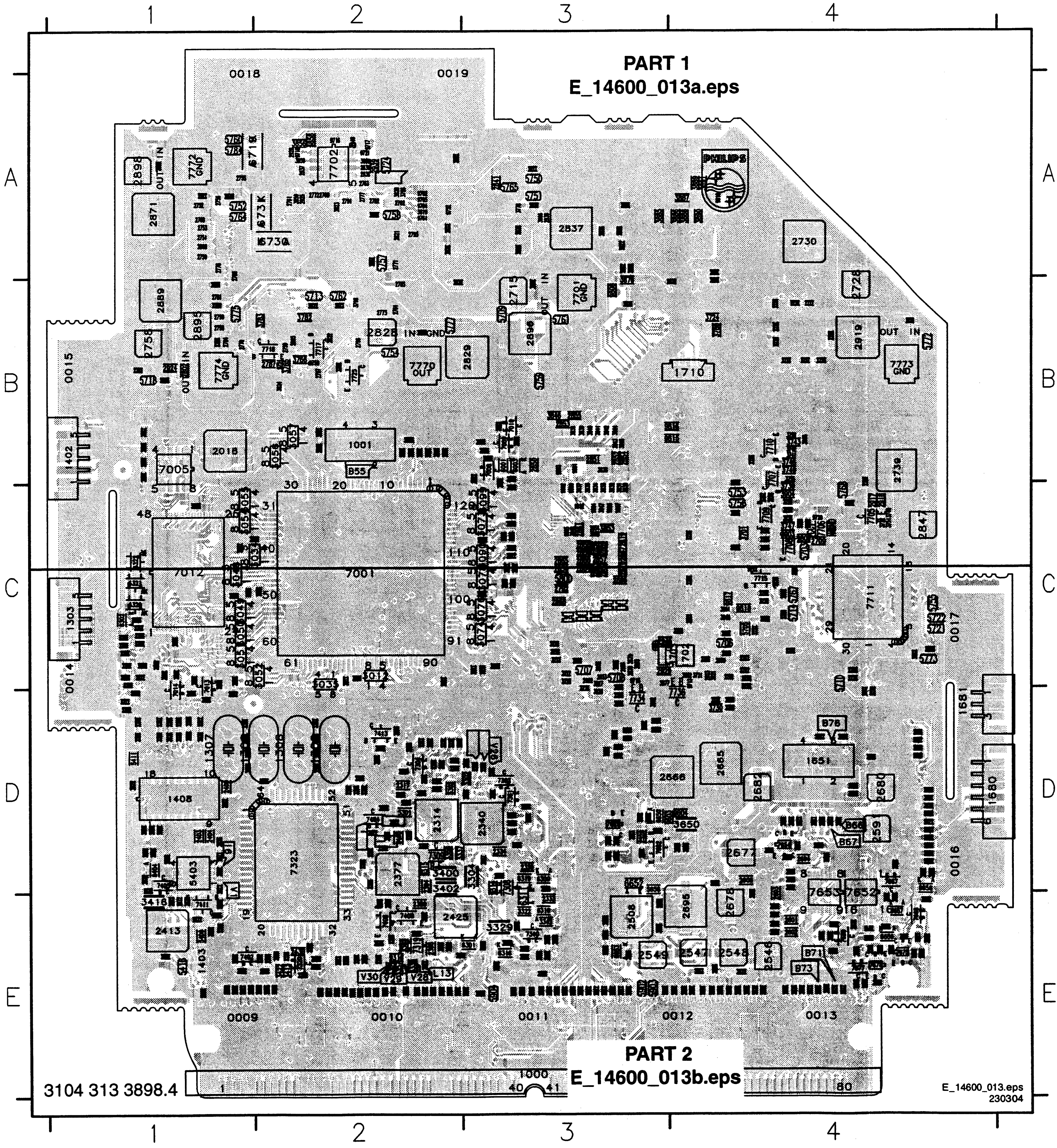
7668	A6
7669	H9
7670	I9
7674	B6
7675-A	A7
7675-B	A9
7677	C14
7678-A	E14
7678-B	E14
7679-A	H14
7679-B	I14
7680	G13
9520	A8
9521	A8
9522	B8
9523	A7
9603	A3
9604	A2
9606	A1
9607	I6
9608	I6
9609	I6
9610	D13
9611	G11
9632	H13
9642	D13
9645	E13
9652	E1
9676	J12
9677	J12
9682	H7
9683	H7
9684	I7
9685	I7
9686	I7
9687	I7
9688	C8
9689	A6
9691	C9
9692	A9
9693	A9
9694	C2
C100	J3
F601	A4
F602	A4
F603	B11
F604	A13
F605	C7
F606	B7
F607	B5
F608	D11
F609	E11
F610	D3
F611	D3
F617	I8
F618	I8
F619	I8
F620	B2
F622	B2
F623	E1
F624	D2
F625	H2
F626	G2
F627	G2
F628	F2
F629	E2
F630	E2
F631	H8
F632	H8
F633	I8
F634	I8
F637	C8
F638	C8
F639	C5
F641	H12
F642	I13
F643	C5
F644	E3
F645	D2
F646	D2
F647	E2
F648	B12
F649	C5
F650	C6
F651	C7
F652	C2
F653	B13
F654	B11
F655	D10
F656	E9
F657	E10
F658	F9
F659	C10
F660	H3
F661	H3
F662	I14
F663	F10
F664	C9
F665	E10
F666	D2
F667	A11
F668	E9
F669	B2
F670	B11
F671	A1
F673	A3
F674	A2
F680	C2
F681	J3
F682	J4
F683	I4
F684	H5
F685	I5
F686	J8
F687	A6
F688	A9
F689	A9
F690	A10
F691	A8
F692	C14
F693	E14
F694	E14
F695	A7
F696	A8
F697	A8
F698	C9
F699	I14

Small Signal Board: Headphone Amplifier


B 1 Ø
HEADPHONE-AMPLIFIER
1
2
3
4
5
6
7
8
9
A
B
C
D
E
+8V_AUD
2520
100n
7681-B
MC33178D
B6-
L-HEADPHONE
2521
100n
F500
5
8
7
F501
+8V_AUD
+8V_AUD
F502
6
4
3510
47K
3512
150K
F507
7682
BC847B
F506
3511
100K
2529
1u
3500
15K
3501
100K
2528
100n
3513
270K
3516
3K9
2522
470p
7685-B
BC847BPN
3535
47K
2579
1n
2523
1n
2531
100p
3504
12K
3536
220R
BAS316
6660
PDZ-2.4B
6661
+5V_AUD
3514
47K
+8V_AUD
7681-A
MC33178D
B6-
R-HEADPHONE
2524
100n
F503
3
8
1
F504
F505
2
4
7684-A
BC847BPN
7685-A
BC847BPN
3537
100K
3538
470K
2596
10u
3539
220R
3515
100K
2530
1u
3541
220R
3505
15K
7684-B
BC847BPN
2525
470p
3506
100K
2526
1n
2532
100p
3509
12K
3543
47K
HEADPHONE-L
B1-
B
HEADPHONE-R
B1-
2578
1n
A
8204 000 8258.4
E_14600_012.eps
220304

2520	A6
2521	A4
2522	C5
2523	C5
2524	C4
2525	E5
2526	E5
2528	B4
2529	B5
2530	D5
2531	C5
2532	E5
2578	E9
2579	B9
2596	C7
3500	B5
3501	B6
3504	C5
3505	E5
3506	E6
3509	E5
3510	A4
3511	B5
3512	B4
3513	B4
3514	C4
3515	D5
3516	B4
3535	C7
3536	C6
3537	C7
3538	C8
3539	C8
3541	D6
3543	E7
6660	C8
6661	C8
7681-A	C6
7681-B	A6
7682	B4
7684-A	C6
7684-B	E6
7685-A	C7
7685-B	C6
F500	A5
F501	A6
F502	A5
F503	C5
F504	D6
F505	D5
F506	B4
F507	B4

Layout Small Signal Board (Overview Top Side)



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0010	E2	2362	D2	2680	D4	2832	A3	3021	C3	3397	D2	3721	C4	3905	B4	6650	D4	9632	E4
0011	E3	2363	D2	2682	D4	2833	A2	3024	B3	3398	D2	3723	C4	3906	A3	6652	D3	9642	E4
0012	E4	2364	D1	2687	D4	2834	A2	3025	B3	3399	E3	3724	B4	3913	C3	6653	E3	9645	D4
0013	E4	2365	E1	2693	E4	2835	A3	3026	B3	3400	D2	3725	C4	3914	C3	6656	E4	9677	D4
0014	D1	2367	E2	2695	D4	2836	C3	3027	B3	3402	D2	3726	D4	3915	C3	6657	E4	9682	D3
0015	B1	2368	E2	2709	C4	2837	A3	3029	C1	3404	E1	3727	C4	3916	C3	6658	E4	9683	D3
0016	D4	2373	E2	2710	B4	2839	A2	3031	C1	3406	D1	3728	D4	3917	C3	6719	A2	9684	D3
0017	C4	2376	D2	2711	B4	2841	A3	3033	B3	3409	D1	3730	D4	5301	D2	6730	A2	9685	D3
0018	A1	2377	D2	2712	B4	2843	C4	3034	C2	3411	D1	3732	C4	5302	D2	6731	A2	9686	D3
0019	A2	2379	D1	2715	B3	2844	A2	3035	C2	3412	D2	3736	C4	5303	C1	7001	B2	9687	D3
1000	E3	2380	D1	2716	B4	2845	C4	3039	B3	3413	E2	3737	C4	5304	C1	7005	B1	9688	E3
1001	B2	2381	D1	2717	B4	2846	C4	3047	B1	3416	E1	3738	C4	5305	C1	7008	B3	9689	E4
1303	C1	2382	D1	2718	C3	2847	C4	3048	C1	3418	D1	3739	C4	5306	C1	7009	B3	9692	D3
1305	D2	2383	D1	2719	C3	2848	C4	3049	C2	3422	E2	3740	C4	5309	C1	7010	B3	9693	D3
1306	D2	2387	D1	2720	D3	2849	A1	3050	C2	3423	E1	3741	B4	5310	C1	7012	C1	9694	D4
1307	D1	2388	E2	2721	C4	2850	B3	3051	C2	3433	D1	3742	B4	5311	D1	7013	C1	9700	C4
1308	D2	2389	E2	2722	D4	2851	B3	3052	C1	3436	E1	3743	B4	5403	D1	7014	D1	9703	C4
1402	B1	2391	E1	2725	B4	2852	B3	3053	C1	3437	D1	3744	C4	5405	D2	7304	D2	9704	A2
1403	E1	2393	E2	2726	B4	2853	B3	3054	C1	3439	E1	3745	B2	5406	E1	7308	D3	9705	A2
1408	D1	2394	D2	2728	B4	2854	B3	3055	C1	3442	E2	3746	B4	5411	D1	7309	D2	9713	C4
1651	D4	2395	D2	2729	B4	2855	B3	3056	B2	3443	E2	3747	C4	5416	E1	7319	E2	9715	C3
1680	D4	2396	D2	2730	A4	2856	C3	3057	B2	3444	E2	3748	C4	5651	D3	7320	E2	9716	A2
1681	D4	2397	D2	2732	C4	2857	C3	3058	B3	3447	E2	3749	B4	5652	D3	7323	D2	9717	A2
1702	C3	2398	D3	2733	B4	2858	C3	3059	C3	3448	E2	3750	B4	5653	E3	7340	E3	9718	A2
1703	C4	2401	D2	2735	C4	2859	C3	3062	C1	3449	E2	3751	C4	5656	D3	7361	D3	9721	A2
1710	B4	2403	D1	2736	C4	2860	C3	3065	C1	3460	D2	3752	C4	5663	D4	7362	D3	9722	C4
2001	B2	2404	D1	2737	C4	2861	C3	3066	D1	3461	D2	3753	C4	5667	D4	7402	E1	9727	B4
2002	B2	2405	D1	2738	B4	2862	C3	3067	D1	3462	D2	3754	C4	5668	D4	7404	D2	9728	B4
2004	B2	2406	D1	2739	B4	2863	C3	3068	C3	3472	E3	3755	B4	5703	C4	7405	D1	9729	C4
2005	B2	2407	D1	2740	C4	2864	C3	3073	C3	3510	D4	3756	C4	5705	C4	7408	E2	9730	D4
2006	B2	2408	D1	2741	C4	2865	C3	3074	C3	3512	D3	3760	B4	5706	C4	7409	E2	9731	D4
2007	B2	2409	D1	2742	C4	2866	C3	3075	C3	3513	D3	3765	B2	5707	C3	7411	E1	9750	B2
2008	B2	2411	D1	2743	C4	2867	C3	3076	C3	3514	D4	3766	B2	5708	C3	7413	D2	9751	B2
2009	C3	2412	D1	2744	C4	2868	C3	3077	C3	3516	D3	3778	A3	5709	B3	7652	D4	9752	A2
2010	C3	2413	E1	2745	C4	2869	C3	3078	C2	3519	E4	3782	B2	5710	C4	7653	D4	9761	A2
2011	C3	2417	D1	2747	C4	2870	C3	3080	C3	3520	E4	3783	B2	5713	B2	7654	D4	9762	A2
2012	C2	2425	E3	2749	C4	2871	A1	3090	C3	3523	E4	3796	A2	5714	C4	7667	D4	9800	C3
2016	B1	2427	C1	2750	A1	2872	B2	3091	B1	3524	E4	3798	B2	5718	B1	7668	E4	9801	B3
2020	B3	2428	D1	2751	A1	2873	B2	3093	C1	3525	E4	3819	A2	5721	C4	7675	E4	9802	C3
2023	B2	2429	D3	2752	A1	2874	C4	3099	C3	3526	D4	3820	A2	5722	C4	7677	E4	9803	B3
2025	C2	2430	E2	2753	A1	2875	A3	3302	D3	3527	D4	3821	C4	5724	A2	7678	E4	9804	C3
2027	C3	2508	E3	2755	A1	2876	A3	3304	E3	3528	E4	3823	A2	5750	A3	7679	D3	9805	C3
2028	C2	2514	E4	2756	A1	2877	A3	3306	E2	3529	E4	3824	B2	5751	A3	7680	E4	9806	C3
2029	C3	2515	E4	2758	B1	2878	B3	3317	E2	3530	E4	3827	C3	5752	A1	7682	D4	9807	C3
2034	C1	2528	D3	2759	B2	2879	B4	3318	D2	3531	D4	3828	D3	5753	C4	7701	A3	9808	B3
2035	C1	2546	E4	2760	A2	2880	B4	3320	D2	3552	E4	3830	C3	5754	B2	7702	A2	9809	C4
2037	C1	2547	E4	2761	A2	2881	A4	3321	D2	3553	D4	3831	C3	5755	C4	7705	C4	9810	A4
2039	C1	2548	E4	2762	A2	2886	A3	3322	E3	3554	D4	3832	C3	5756	C4	7706	C4	9812	C3
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2318	D2	2570	D4	2780	A1	2899	A1	3342	E2	3604	E4	3842	B3	5768	C4	7734	C3	9906	E2
2322	D2	2571	D4	2781	B1	2912	E3	3343	E3	3605	E4	3843	B3	5772	B4	7736	C4	9907	E1
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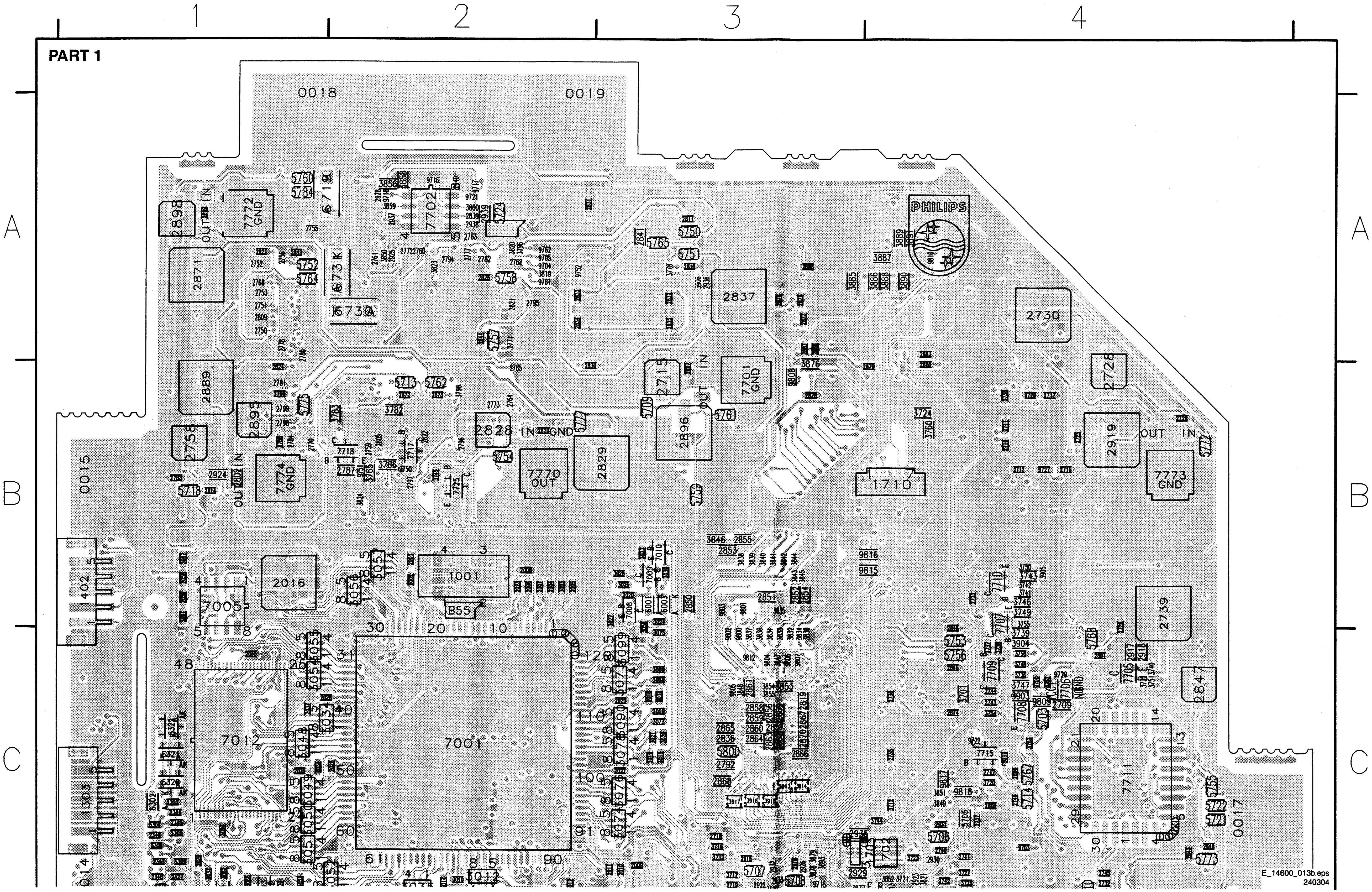
Layout Small Signal Board (Part 1 Top Side)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7773 GND
7770 OUT
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2871
2889
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1303
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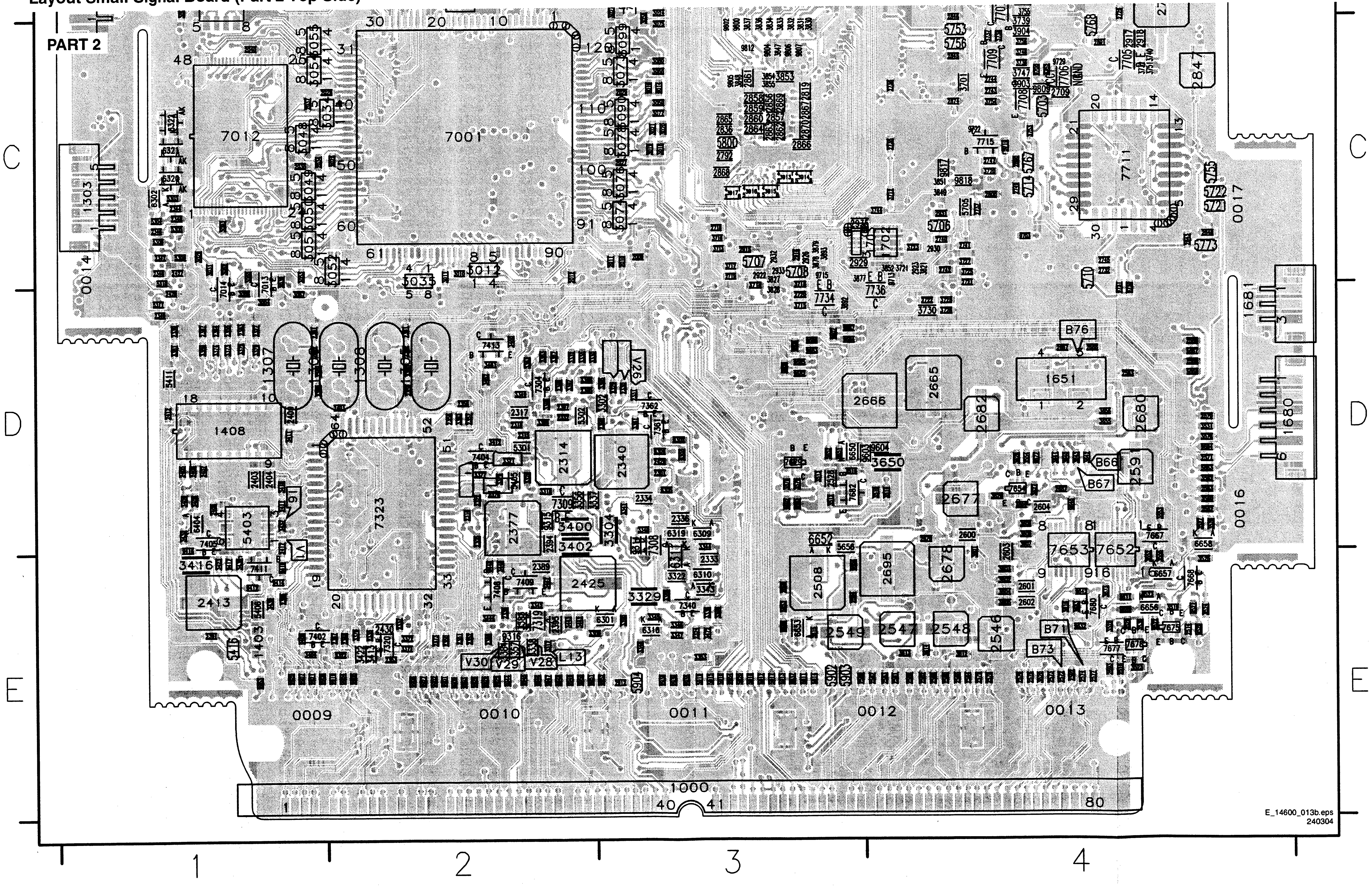
OUT
IN
GND

E_14600_013b.eps
240304

Layout Small Signal Board (Part 2 Top Side)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B71
B73
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7707
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V28
V29
V30
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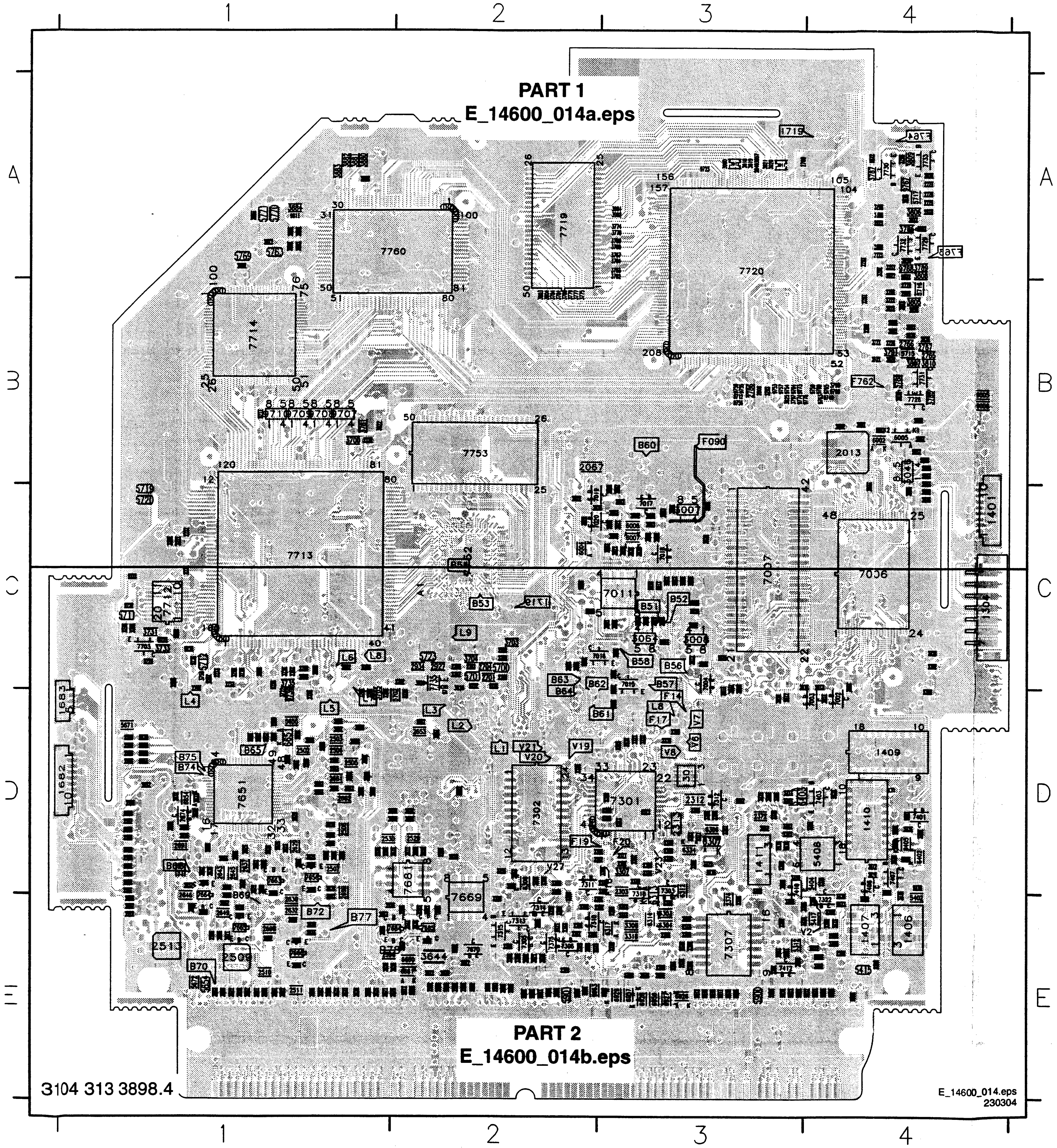
Layout Small Signal Board (Overview Bottom Side)



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0019	A3
1000	E2
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1305	D3
1306	D4
1307	D4
1308	D3
1401	C4
1406	E4
1407	E4
1409	D4
1410	D4
1411	D3
1682	D1
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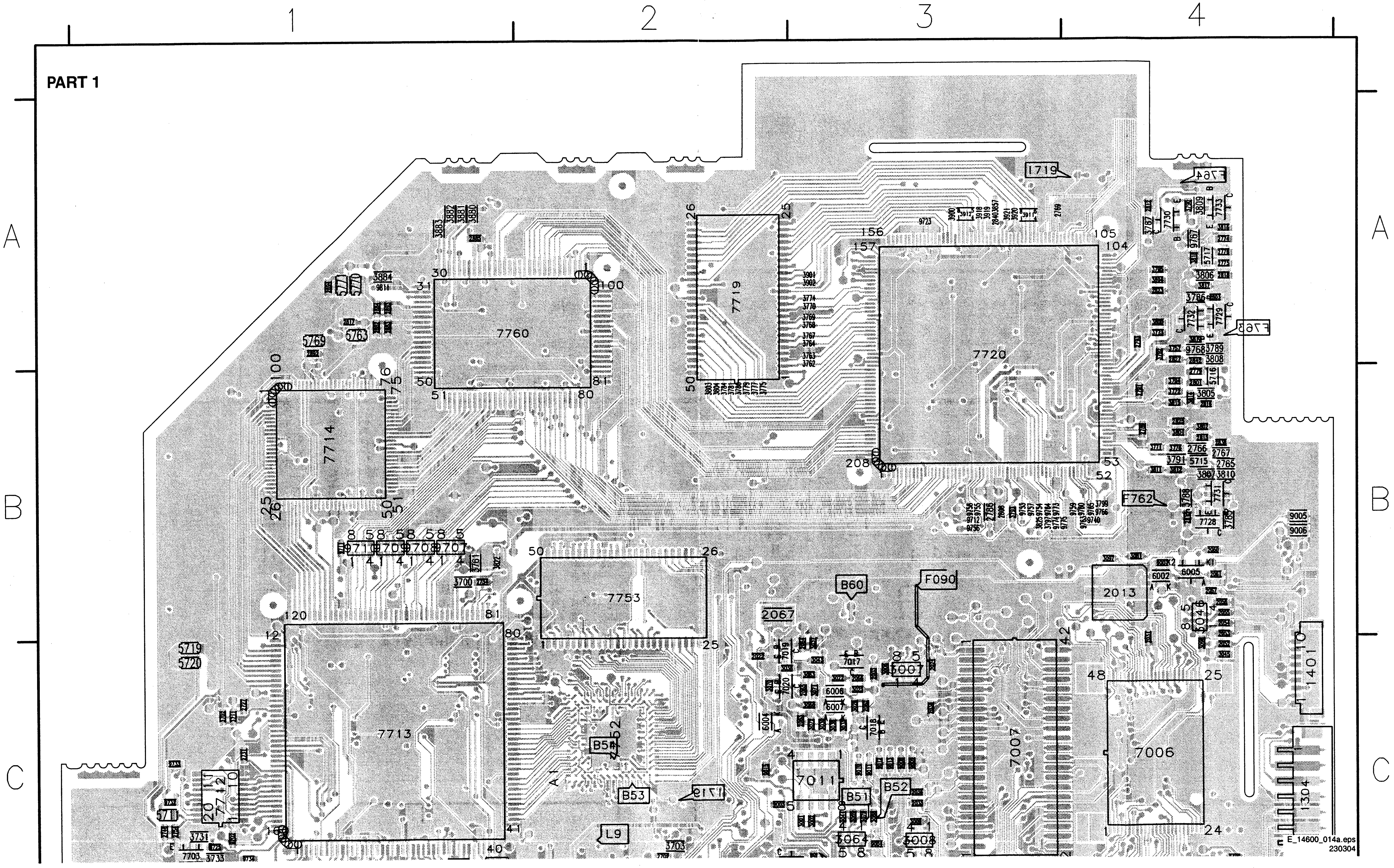
Layout Small Signal Board (Part 1 Bottom Side)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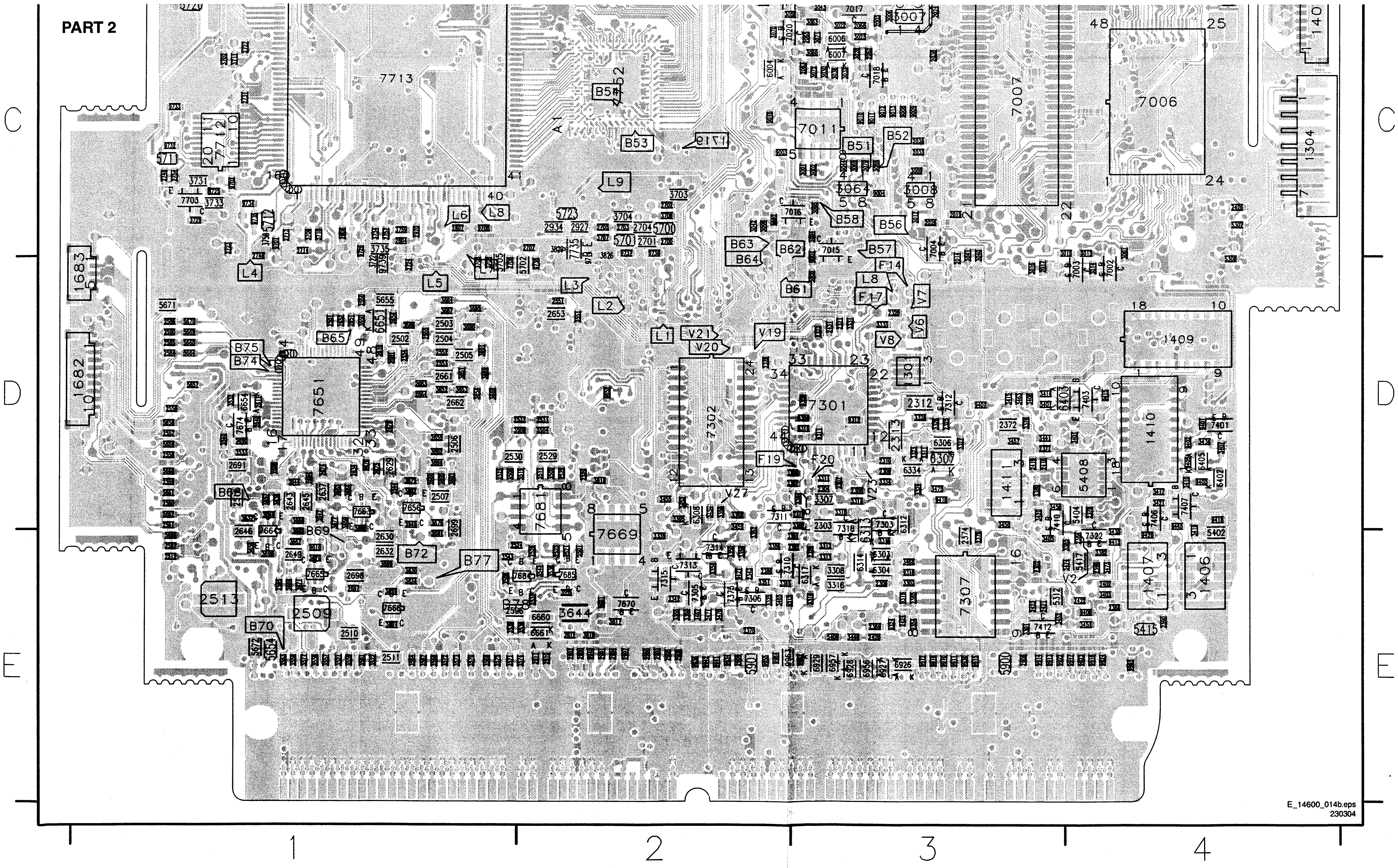
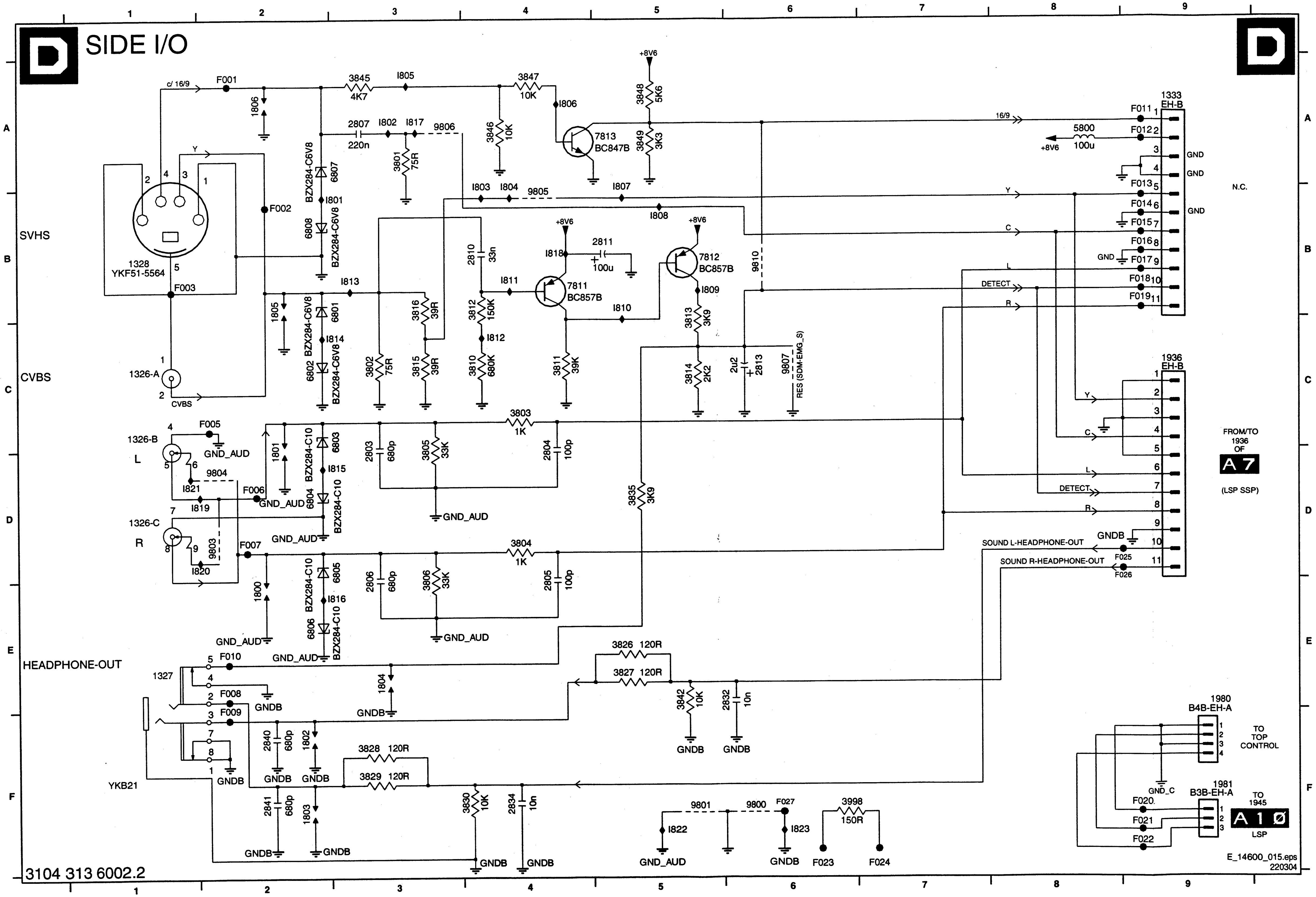
7753
7713
7007
7006
7011
2013
2067
1401
1304
1719
F764
F763
F762
F090
B60
B51
B52
B53
L9
5769
5763
5719
5720
9710
9709
9708
9707
3700
6002
6005
5046
6007
6008
3064
E_14600_014a.eps
230304

Layout Small Signal Board (Part 2 Bottom Side)

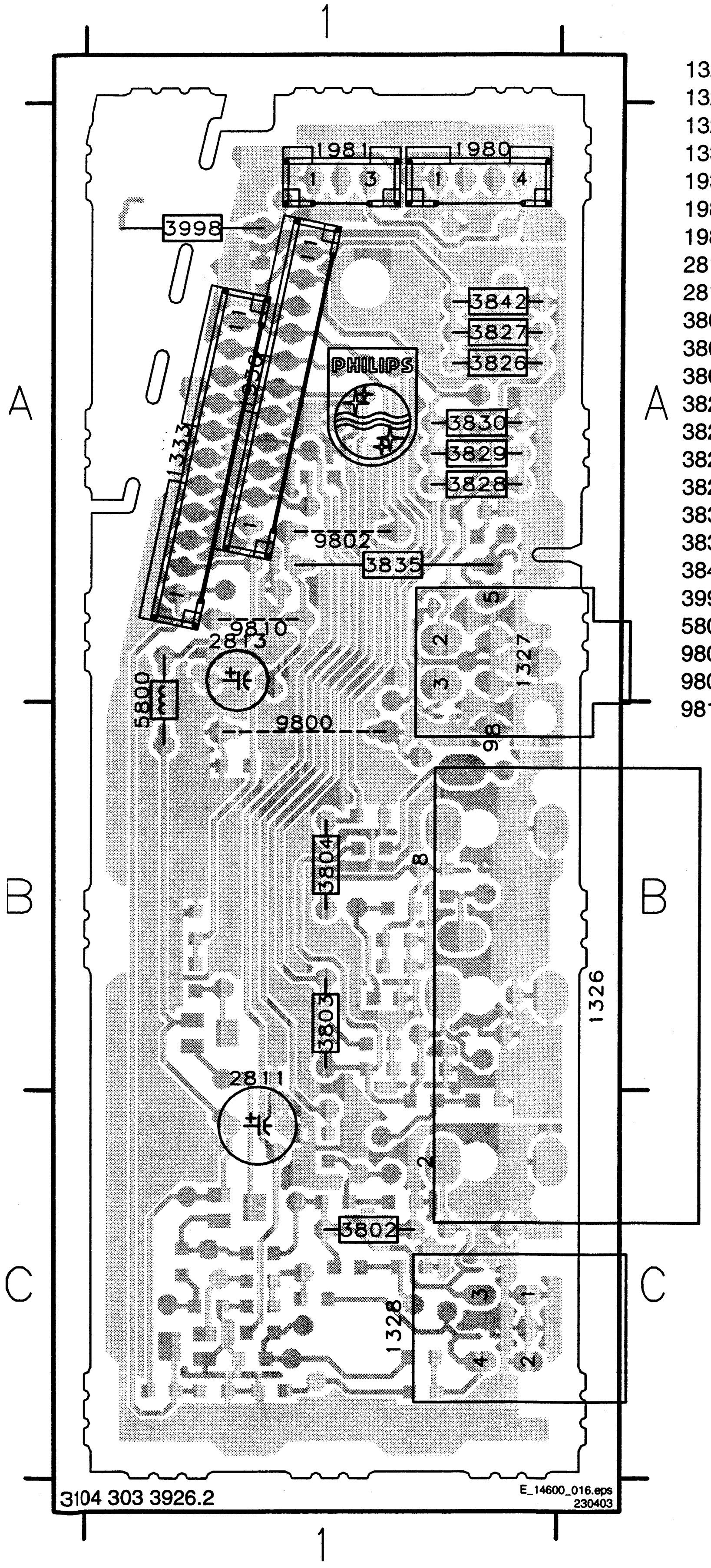

PART 2
C
D
E
1
2
3
4
7713
7712
7703
3731
3733
1683
1682
5671
L4
L5
L6
L8
L9
L3
L2
L1
B53
B52
B51
B56
B57
B58
B61
B62
B63
B64
B65
B69
B70
B72
B74
B75
B77
B78
V19
V20
V21
V27
V2
V6
V7
V8
F14
F17
F19
F20
7651
7302
7301
7307
7011
7007
7006
1304
1409
1410
1411
1406
1407
5408
7669
7681
2513
2509
2510
2511
3644
5655
2502
2503
2504
2505
2661
2662
2691
2507
2630
2632
2698
2646
2529
2530
2312
2313
2303
6306
6307
6334
7016
7045
7004
7003
7002
6006
6007
5007
5008
6004
7017
7018
7020
3703
3704
2704
5700
5701
2701
5723
2934
2927
2653
7735
7401
5402
5415
7412
7306
7313
7314
7315
7318
3307
3308
3316
6303
6304
6312
6313
6314
7670
6660
6661
2372
E_14600_014b.eps
230304

Side IO Panel


D
SIDE I/O
SVHS
CVBS
HEADPHONE-OUT
1328
YKF51-5564
1326-A
1326-B
1326-C
1327
YKB21
L
R
Y
C
CVBS
c/ 16/9
F001
F002
F003
F005
F006
F007
F008
F009
F010
3845 4K7
3847 10K
3848 5K6
3849 3K3
3846 10K
3801 75R
3802 75R
3803 1K
3804 1K
3805 33K
3806 33K
3810 680K
3811 39K
3812 150K
3813 3K9
3814 2K2
3815 39R
3816 39R
3826 120R
3827 120R
3828 120R
3829 120R
3830 10K
3835 3K9
3842 10K
3998 150R
2807 220n
2810 33n
2811 100u
2813 2u2
2803 680p
2804 100p
2805 100p
2806 680p
2832 10n
2834 10n
2840 680p
2841 680p
5800 100u
6801 BZX284-C6V8
6802 BZX284-C6V8
6803 BZX284-C10
6804 BZX284-C10
6805 BZX284-C10
6806 BZX284-C10
6807 BZX284-C6V8
6808 BZX284-C6V8
7811 BC857B
7812 BC857B
7813 BC847B
+8V6
9800
9801
9803
9804
9805
9806
9807 RES (SDM-EMG_S)
9810
GND
GND_AUD
GNDB
GND_C
16/9
DETECT
SOUND L-HEADPHONE-OUT
SOUND R-HEADPHONE-OUT
1333 EH-B
1936 EH-B
N.C.
FROM/TO 1936 OF
A 7
(LSP SSP)
1980 B4B-EH-A
TO TOP CONTROL
1981 B3B-EH-A
TO 1945
A 1 Ø
LSP
F011
F012
F013
F014
F015
F016
F017
F018
F019
F020
F021
F022
F023
F024
F025
F026
F027
3104 313 6002.2
E_14600_015.eps
220304

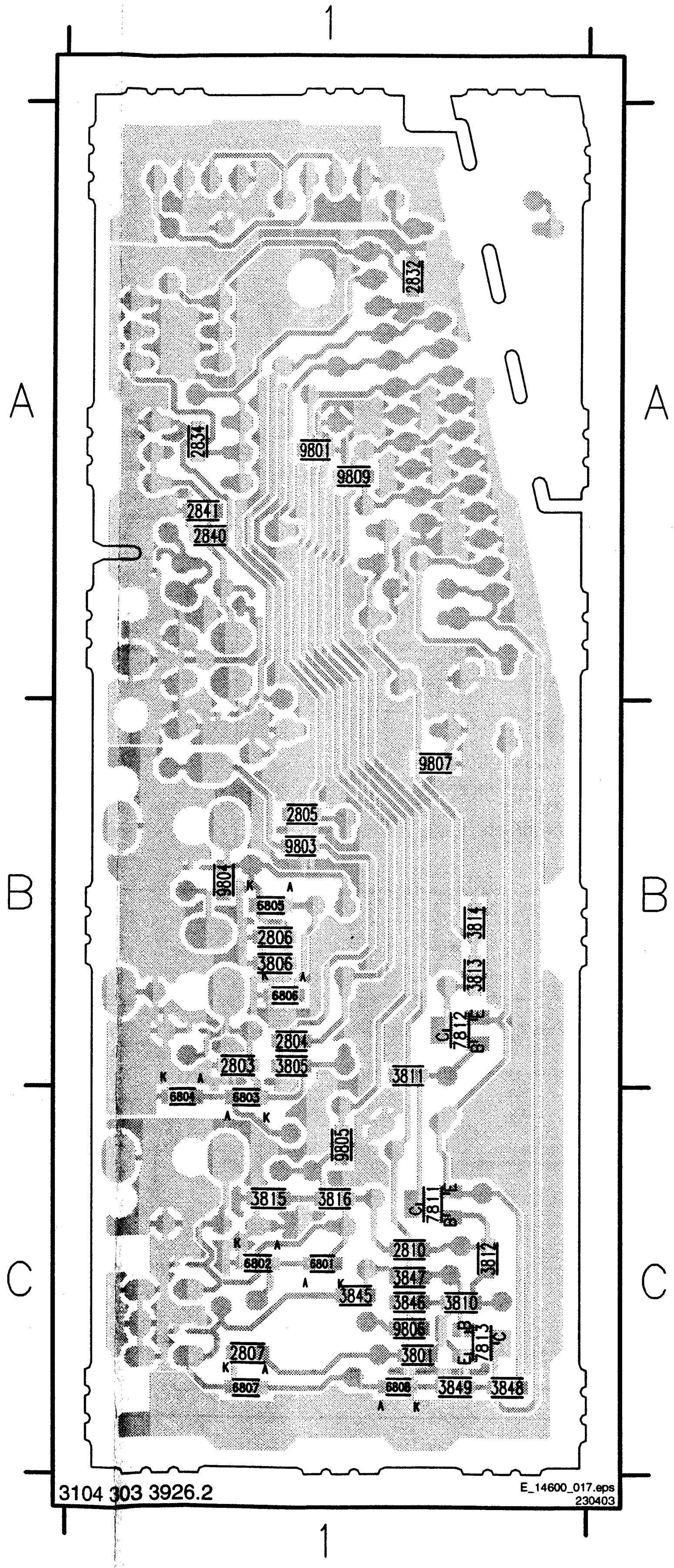
1326-A	C1
1326-B	C1
1326-C	D1
1327	E1
1328	B1
1333	A9
1800	E2
1801	D2
1802	F2
1803	F2
1804	E3
1805	B2
1806	A2
1936	C9
1980	E9
1981	F9
2803	D3
2804	D4
2805	E4
2806	E3
2807	A3
2810	B4
2811	B5
2813	C6
2832	E6
2834	F4
2840	F2
2841	F2
3801	A3
3802	C3
3803	C4
3804	D4
3805	C3
3806	D3
3810	C4
3811	C4
3812	B4
3813	B5
3814	C5
3815	C3
3816	B3
3826	E5
3827	E5
3828	F3
3829	F3
3830	F4
3835	D5
3842	E5
3845	A3
3846	A4
3847	A4
3848	A5
3849	A5
3998	F6
5800	A8
6801	B3
6802	C2
6803	C3
6804	D2
6805	D3
6806	E2
6807	A3
6808	B2
7811	B4
7812	B5
7813	A5
9800	F6
9801	F5
9803	D2
9804	D2
9805	B4
9806	A3
9807	C6
9810	B6
F001	A2
F002	B2
F003	B1
F005	C2
F006	D2
F007	D2
F008	E2
F009	F2
F010	E2
F011	A9
F012	A9
F013	B9
F014	B9
F015	B9
F016	B9
F017	B9
F018	B9
F019	B9
F020	F9
F021	F9
F022	F9
F023	F6
F024	F7
F025	D9
F026	E9
F027	F6
I801	B3
I802	A3
I803	A4
I804	A4
I805	A3
I806	A4
I807	A5
I808	B5
I809	B5
I810	B5
I811	B4
I812	C4
I813	B3
I814	C3
I815	D3
I816	E3
I817	A3
I818	B4
I819	D2
I820	D2
I821	D1
I822	F5
I823	F6

Layout Side IO Panel (Top Side)


1
A
B
C
1981
1980
3998
3842
3827
3826
PHILIPS
3830
3829
3828
1333
1936
9802
3835
1327
9810
2813
5800
9800
3804
1326
3803
2811
3802
1328
3104 303 3926.2
E_14600_016.eps
230403

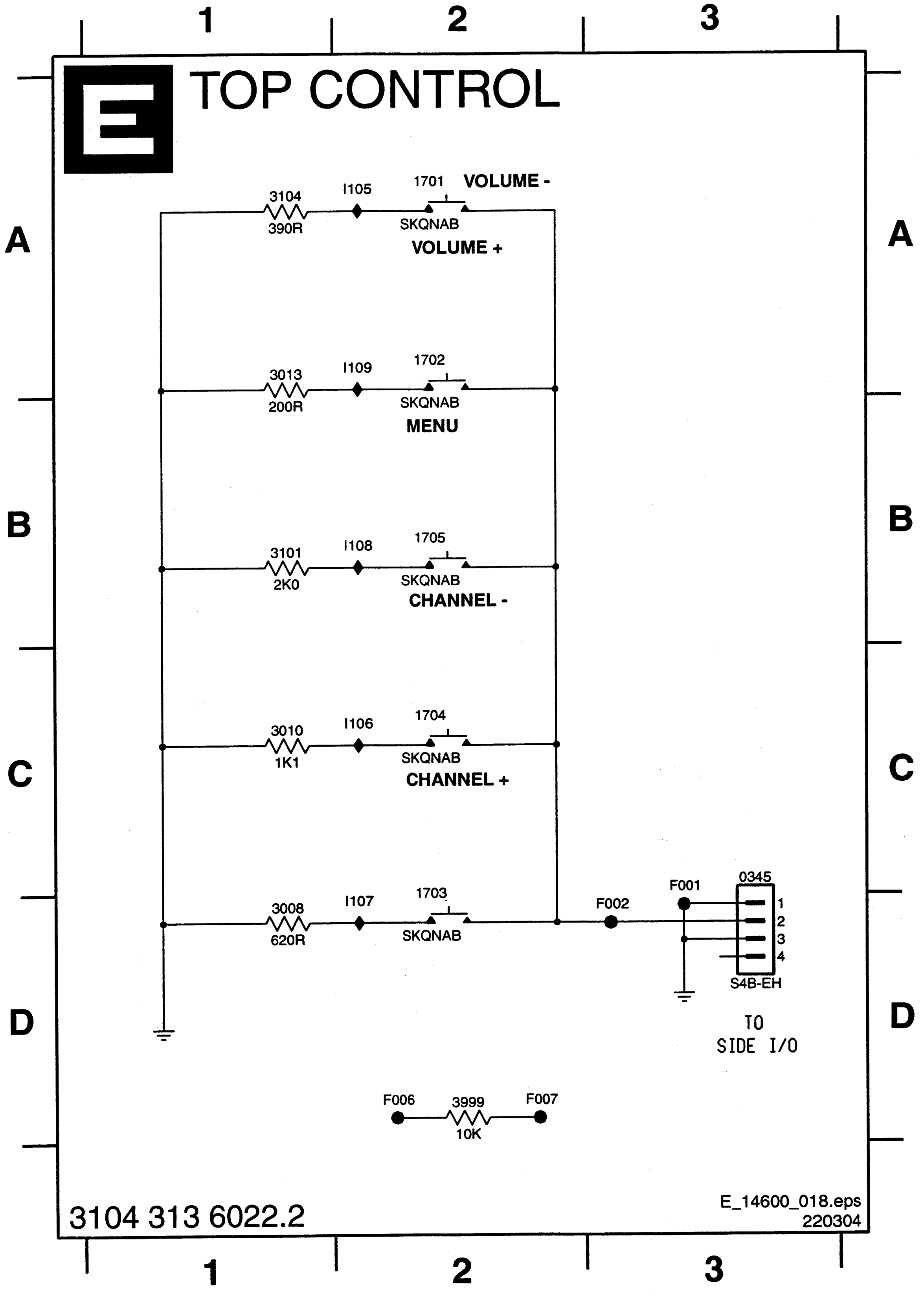
1326	B1
1327	A1
1328	C1
1333	A1
1936	A1
1980	A1
1981	A1
2811	B1
2813	A1
3802	C1
3803	B1
3804	B1
3826	A1
3827	A1
3828	A1
3829	A1
3830	A1
3835	A1
3842	A1
3998	A1
5800	A1
9800	B1
9802	A1
9810	A1

Layout Side IO Panel (Bottom Side)


1
A
B
C
2832
2834
9801
9809
2841
2840
9807
2805
9803
9804
6805
2806
3806
6806
3814
3813
7812
2804
2803
3805
3811
6804
6803
9805
3815
3816
7811
2810
3812
6802
6801
3847
3845
3846
3810
9806
7813
2807
3801
6807
6808
3849
3848
3104 303 3926.2
E_14600_017.eps
230403

2803	B1
2804	B1
2805	B1
2806	B1
2807	C1
2810	C1
2832	A1
2834	A1
2840	A1
2841	A1
3801	C1
3805	B1
3806	B1
3810	C1
3811	B1
3812	C1
3813	B1
3814	B1
3815	C1
3816	C1
3845	C1
3846	C1
3847	C1
3848	C1
3849	C1
6801	C1
6802	C1
6803	B1
6804	C1
6805	B1
6806	B1
6807	C1
6808	C1
7811	C1
7812	B1
7813	C1
9801	A1
9803	B1
9804	B1
9805	C1
9806	C1
9807	B1
9809	A1

Top Control Panel (FL13B)

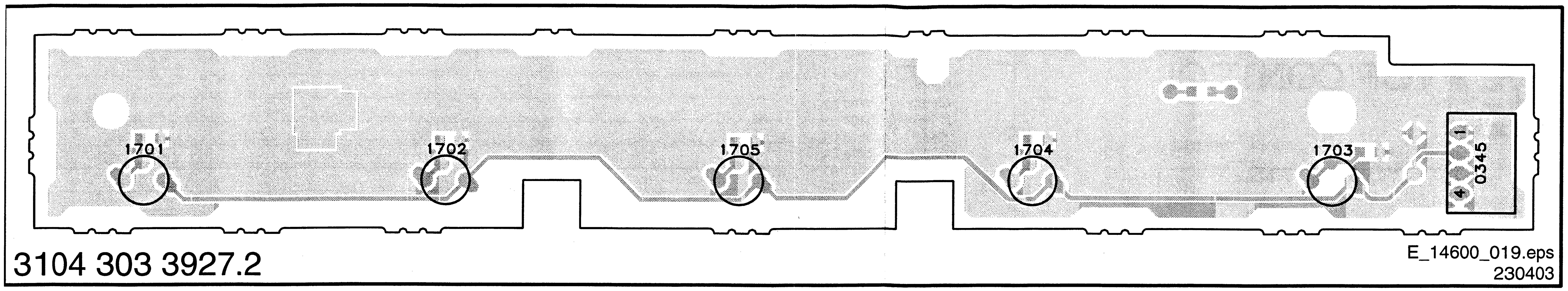

1
2
3
A
B
C
D
E
TOP CONTROL
3104
390R
I105
1701
VOLUME -
SKQNAB
VOLUME +
3013
200R
I109
1702
SKQNAB
MENU
3101
2K0
I108
1705
SKQNAB
CHANNEL -
3010
1K1
I106
1704
SKQNAB
CHANNEL +
3008
620R
I107
1703
SKQNAB
F002
F001
0345
1
2
3
4
S4B-EH
TO
SIDE I/O
F006
3999
10K
F007
3104 313 6022.2
E_14600_018.eps
220304

0345	C3
1701	A2
1702	A2
1703	C2
1704	B2
1705	B2
3008	C1
3010	B1
3013	A1
3101	B1
3104	A1
3999	D2
F001	C3
F002	C3
F006	D2
F007	D2
I105	A2
I106	B2
I107	C2
I108	B2
I109	A2

Personal Notes:

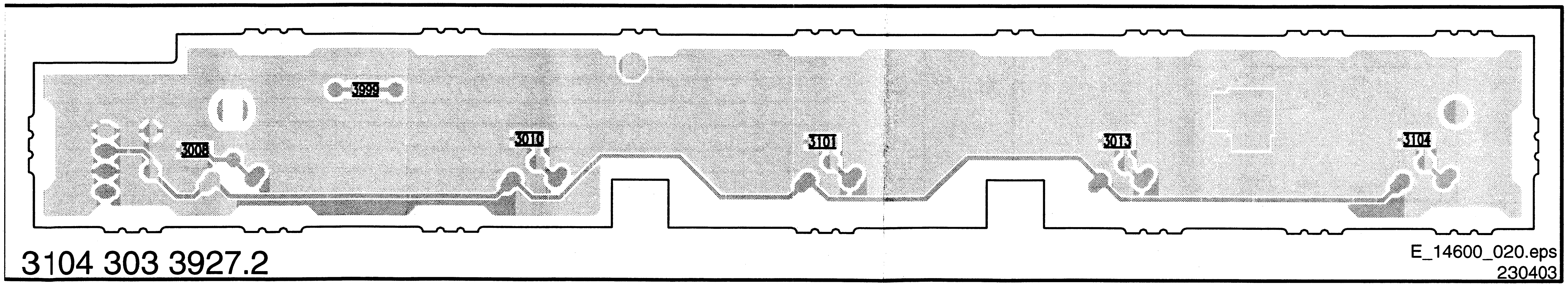
E_06532_012.eps
130204

Layout Top Control Panel (Top Side)


1701
1702
1705
1704
1703
1
0345
4
3104 303 3927.2

E_14600_019.eps
230403

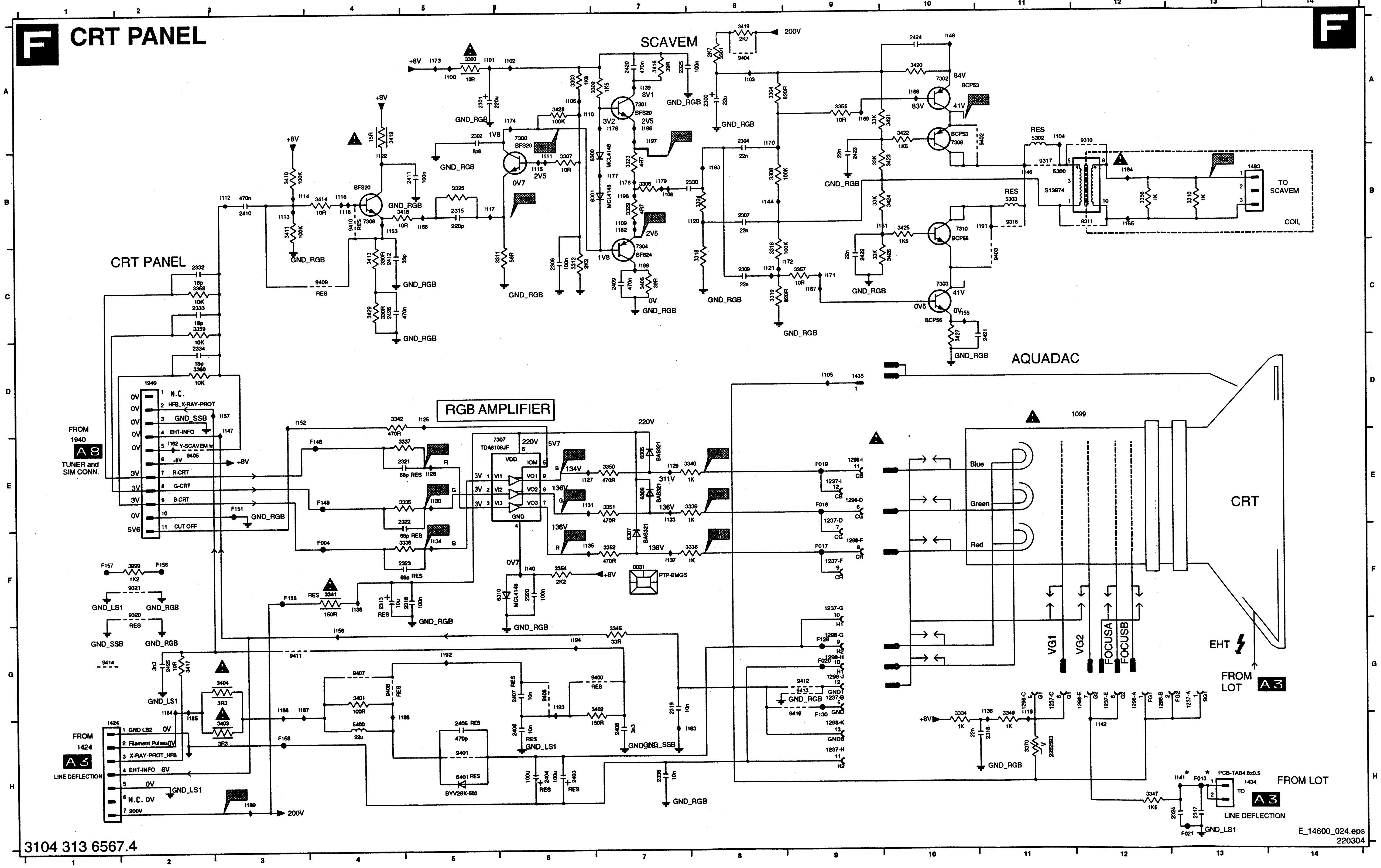
Layout Top Control Panel (Bottom Side)


3999
3008
3010
3101
3013
3104
3104 303 3927.2

E_14600_020.eps
230403

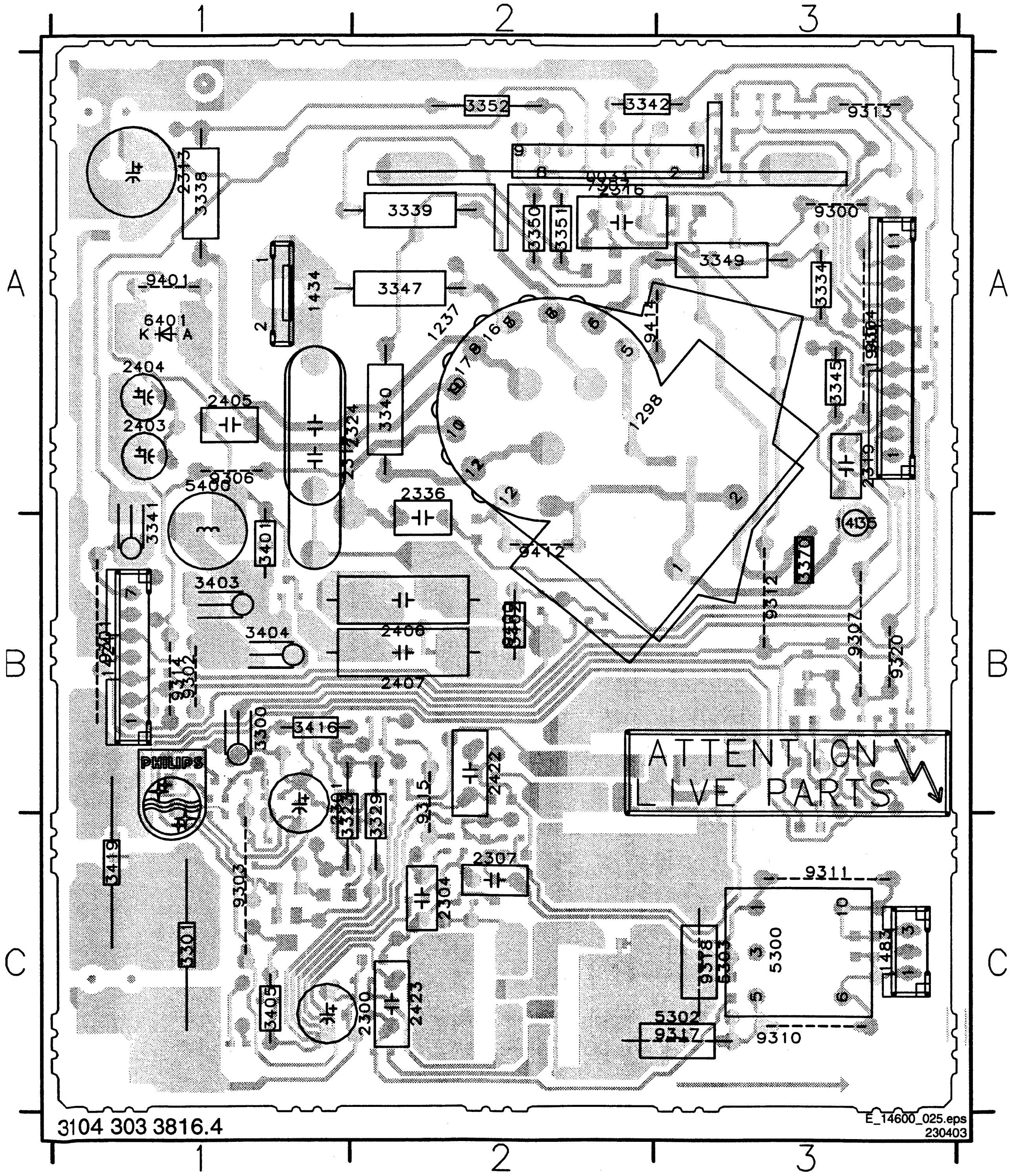
CRT Panel

0031 F7	1298-B G12	1434 H13	2313 F4	2325 A7	2408 H7	2426 C4	3312 C6	3337 E5	3352 F7	3403 H3	3419 A8	3999 F2	6401 H5	9311 B12	9406 G6	F013 H13	F155 F3	I108 B7	I119 G11	I134 F5	I147 D3	I165 B12	I177 B7	I191 B11
1237-A G13	1298-C G11	1435 D9	2315 B5	2330 B8	2409 C7	3300 A5	3316 C8	3338 F8	3354 F6	3404 G3	3420 A10	5300 B11	7300 A6	9317 B11	9407 G4	F017 F9	F156 F2	I109 B7	I120 B8	I135 F6	I148 A10	I166 A10	I178 B7	I192 G5
1237-B G9	1298-D E9	1483 B13	2316 F5	2332 C2	2410 B3	3301 A8	3318 C8	3339 E8	3355 A9	3405 C7	3421 A10	5302 A11	7301 A7	9318 B11	9408 G4	F018 E9	F157 F1	I110 A6	I121 C8	I136 G11	I151 B10	I167 C9	I179 B7	I193 G6
1237-C G11	1298-E G12	1940 D2	2317 H13	2333 C2	2411 B5	3302 A7	3319 C8	3340 E8	3356 B12	3410 B3	3422 A10	5303 B11	7302 A10	9320 F2	9409 C4	F019 E9	F158 H3	I111 B6	I122 B4	I137 F7	I152 D3	I168 B5	I180 B8	I194 G6
1237-D E9	1298-F F9	2300 A8	2318 H11	2334 D2	2412 C4	3303 A6	3323 B7	3341 F4	3357 C9	3411 B3	3423 B10	5400 H4	7303 C10	9321 F2	9410 B4	F020 G9	I100 A5	I112 B3	I125 D5	I138 F4	I153 B4	I169 A9	I182 B7	I196 A7
1237-E G12	1298-G G9	2301 A5	2319 G7	2336 H7	2420 A7	3304 A8	3324 B8	3342 D4	3358 C2	3412 A4	3424 B10	6300 B7	7304 C7	9400 G7	9411 G3	F021 H13	I101 A5	I113 B3	I126 E5	I139 A7	I155 C10	I170 A8	I184 G2	I197 A7
1237-F F9	1298-H G9	2302 A5	2320 F6	2403 H6	2421 C11	3306 B7	3325 B5	3345 G7	3359 C2	3413 C4	3425 B10	6301 B7	7307 E5	9401 H5	9412 G9	F128 G9	I102 A6	I114 B3	I127 E6	I140 F6	I156 G4	I171 C9	I185 G2	I198 B7
1237-G F9	1298-I E9	2304 A8	2321 E5	2404 H6	2422 C9	3307 B6	3329 B7	3347 H12	3360 D2	3414 B4	3426 C10	6305 E7	7308 B4	9402 A11	9413 G9	F130 H9	I103 A8	I115 B6	I129 E7	I141 H13	I157 D3	I172 C9	I186 G3	I199 C7
1237-H H9	1298-J G9	2306 C6	2322 E5	2405 H5	2423 B9	3308 B8	3334 H10	3349 H11	3370 H11	3416 A7	3427 D10	6306 E7	7309 A10	9403 C11	9414 G1	F148 E4	I104 A11	I116 B4	I130 E5	I142 H12	I162 E2	I173 A5	I187 G3	
1237-I E9	1298-K H9	2307 B8	2323 F5	2406 H6	2424 A10	3310 B13	3335 E5	3350 E7	3401 G4	3417 G2	3428 A6	6307 F7	7310 B10	9404 A8	9416 H9	F149 E4	I105 D9	I117 B5	I131 E6	I144 B8	I163 H8	I174 A6	I188 G4	
1298-A G12	1424 H1	2309 C8	2324 H13	2407 G6	2425 G2	3311 C6	3336 F5	3351 E7	3402 G7	3418 B5	3429 C4	6310 F6	9310 A12	9405 E2	F004 F4	F151 E3	I106 A6	I118 B4	I133 E7	I146 B11	I164 B12	I176 A7	I189 H3	


F
CRT PANEL
SCAVEM
CRT PANEL
RGB AMPLIFIER
AQUADAC
CRT
TO SCAVEM
COIL
FROM 1940
A8
TUNER and SIM CONN.
FROM 1424
A3
LINE DEFLECTION
FROM LOT
A3
FROM LOT
A3
LINE DEFLECTION
EHT
VG1
VG2
FOCUSA
FOCUSB
Blue
Green
Red
TDA6108JF
BFS20
BF824
BCP53
BCP56
BYV29X-500
BAS321
MCL4148
PTP-EMGS
1 N.C.
2 HFB_X-RAY-PROT
3 GND_SSB
4 EHT-INFO
5 Y-SCAVEM
6 +8V
7 R-CRT
8 G-CRT
9 B-CRT
10
11 CUT OFF
1 GND LS2 0V
2 Filament Pulses 0V
3 X-RAY-PROT_HFB
4 EHT-INFO 6V
5 0V
6 N.C. 0V
7 200V
GND_RGB
GND_LS1
GND_SSB
+8V
200V
220V
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H
3104 313 6567.4
E_14600_024.eps
220304

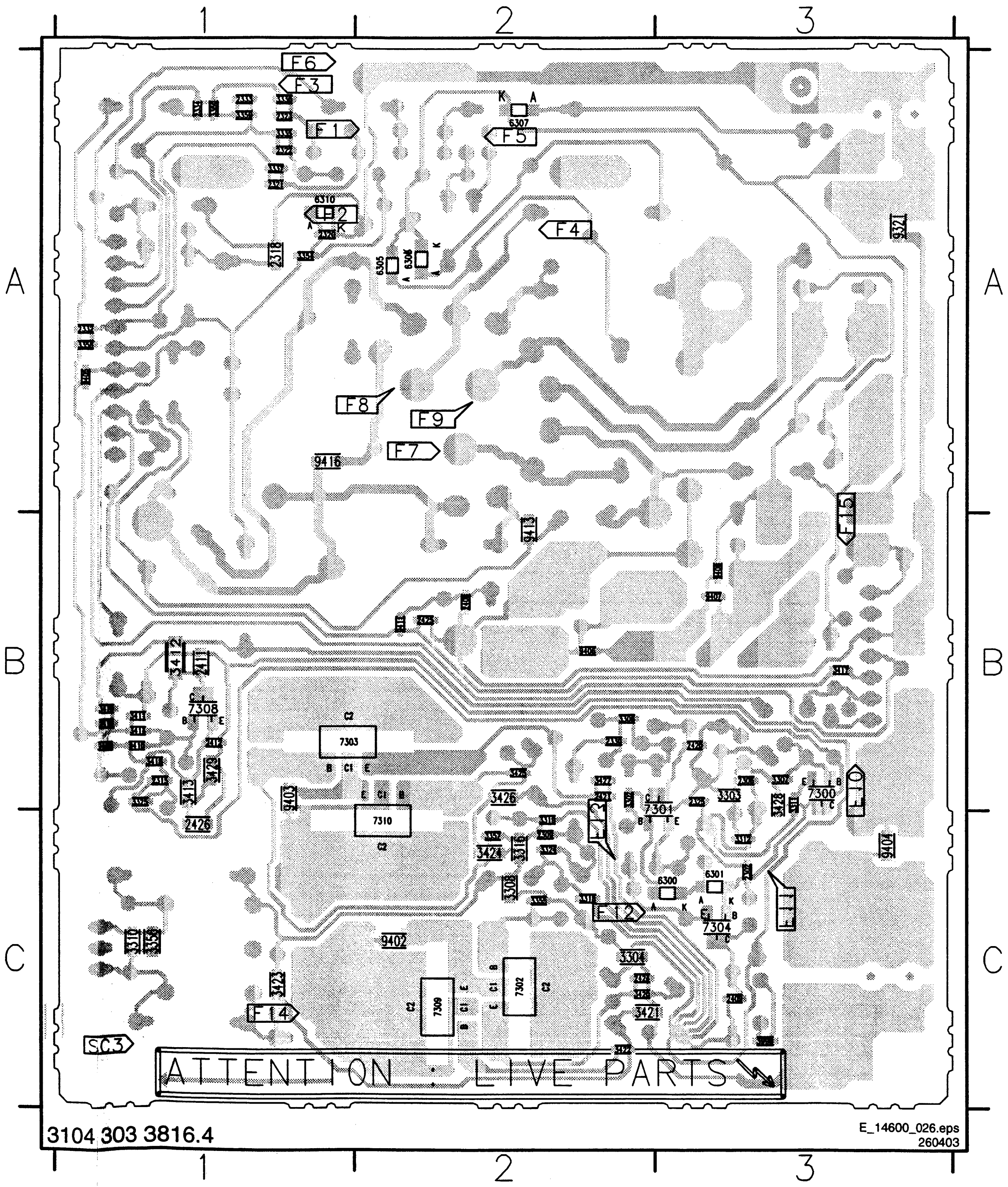
Layout CRT Panel (Top Side)

0031	A2
1237	A2
1298	A2
1424	B1
1434	A1
1435	A3
1483	C3
1940	A3
2300	C1
2301	B1
2304	C2
2307	C2
2313	A1
2316	A2
2317	B2
2319	A3
2324	A2
2336	A2
2403	A1
2404	A1
2405	A1
2406	B2
2407	B2
2422	B2
2423	C2
3300	B1
3301	C1
3323	C1
3329	C2
3334	A3
3338	A1
3339	A2
3340	A2
3341	A1
3342	A2
3345	A3
3347	A2
3349	A3
3350	A2
3351	A2
3352	A2
3370	B3
3401	B1
3402	B2
3403	B1
3404	B1
3405	C1
3416	B1
3419	C1
5300	C3
5302	C3
5303	C3
5400	A1
6401	A1
7307	A2
9300	A3
9301	B1
9302	B1
9303	C1
9304	A3
9306	A1
9307	B3
9310	C3
9311	C3
9312	B3
9313	A3
9314	B1
9315	B2
9317	C3
9318	C3
9320	B3
9400	B2
9401	A1
9412	B2
9414	A2

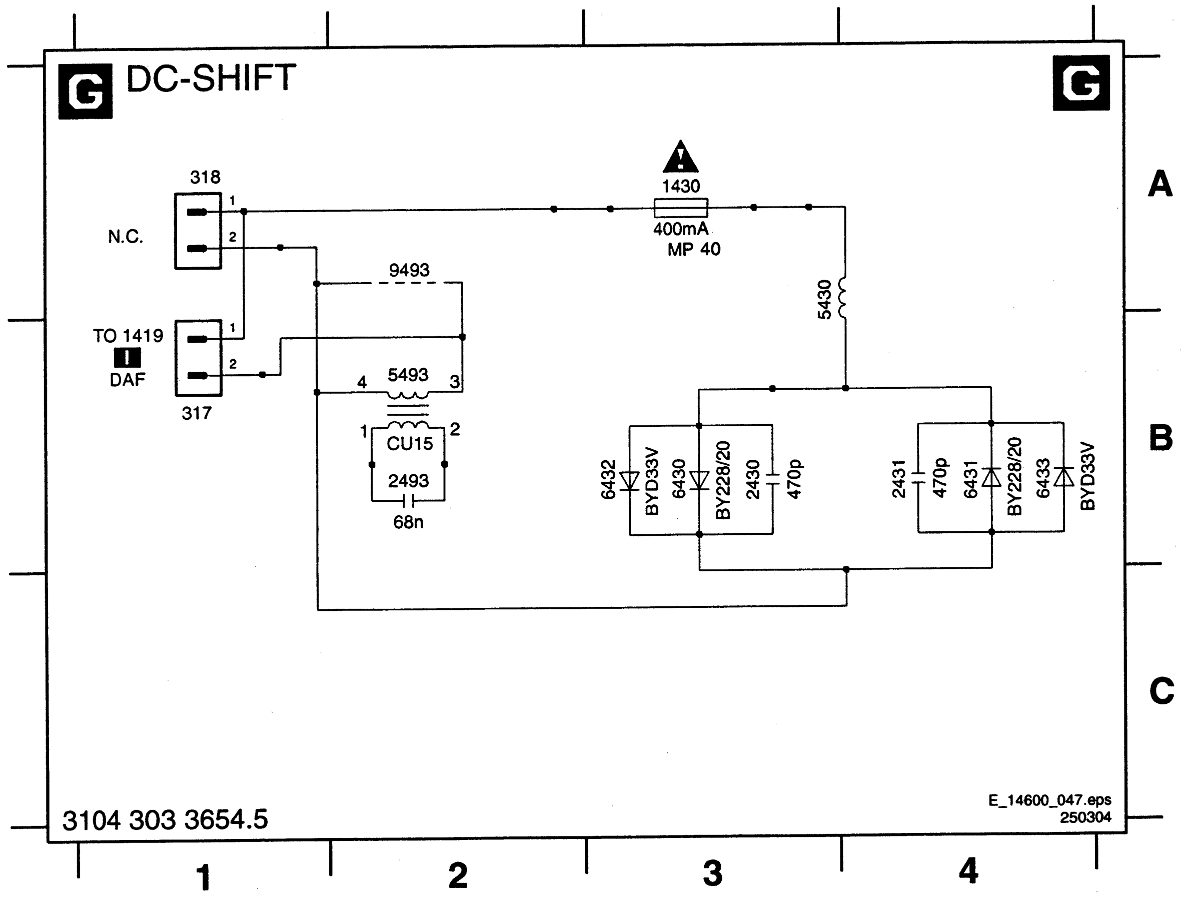

1
2
3
A
B
C
3352
3342
9313
3338
3339
9300
3350
3351
3349
3347
1434
9401
6401
3334
2404
2405
2403
3340
1298
1237
9306
5400
2336
2324
3341
3401
3403
3404
2406
2407
9412
3370
1435
9312
9307
9320
3300
3416
2422
9315
ATTENTION ON LIVE PARTS
PHILIPS
3419
3301
9303
2307
2304
9311
5300
1483
3405
2300
2423
9317
5302
5303
9310
3104 303 3816.4
E_14600_025.eps
230403

Layout CRT Panel (Bottom Side)

2302	C3
2306	B3
2309	C2
2315	B1
2318	A1
2320	A1
2321	A1
2322	A1
2323	A1
2325	B3
2330	B2
2332	A1
2333	A1
2334	A1
2408	B2
2409	C3
2410	B1
2411	B1
2412	B1
2420	B3
2421	B2
2424	C2
2425	B2
2426	C1
3302	B2
3303	B3
3304	C2
3306	B2
3307	B3
3308	C2
3310	C1
3311	B3
3312	C3
3316	C2
3318	C2
3319	C2
3324	C2
3325	B1
3335	A1
3336	A1
3337	A1
3354	A1
3355	C2
3356	C1
3357	C2
3358	A1
3359	A1
3360	A1
3410	B1
3411	B1
3412	B1
3413	B1
3414	B1
3417	B3
3418	B1
3420	C2
3421	C2
3422	C2
3423	C1
3424	C2
3425	B2
3426	B2
3427	B2
3428	B3
3429	B1
3999	C3
6300	C3
6301	C3
6305	A2
6306	A2
6307	A2
6310	A1
7300	C3
7301	B3
7302	C2
7303	B1
7304	C3
7308	B1
7309	C2
7310	C1
9321	A3
9402	C2
9403	B1
9404	C3
9405	A1
9406	B2
9407	B3
9408	B3
9409	B1
9410	B1
9411	B2
9413	B2
9416	A1


1
2
3
A
B
C
F6
F3
F1
F5
6307
6310
F2
F4
2318
9321
F8
F9
F7
9416
F15
3413
3412
7308
7303
3426
7310
9403
2426
7301
3303
7300
F10
3424
9404
3308
6300
6301
F12
7304
F11
9402
7309
7302
3423
F14
3304
3421
SC3
ATTENTION : LIVE PARTS
3104 303 3816.4
E_14600_026.eps
260403

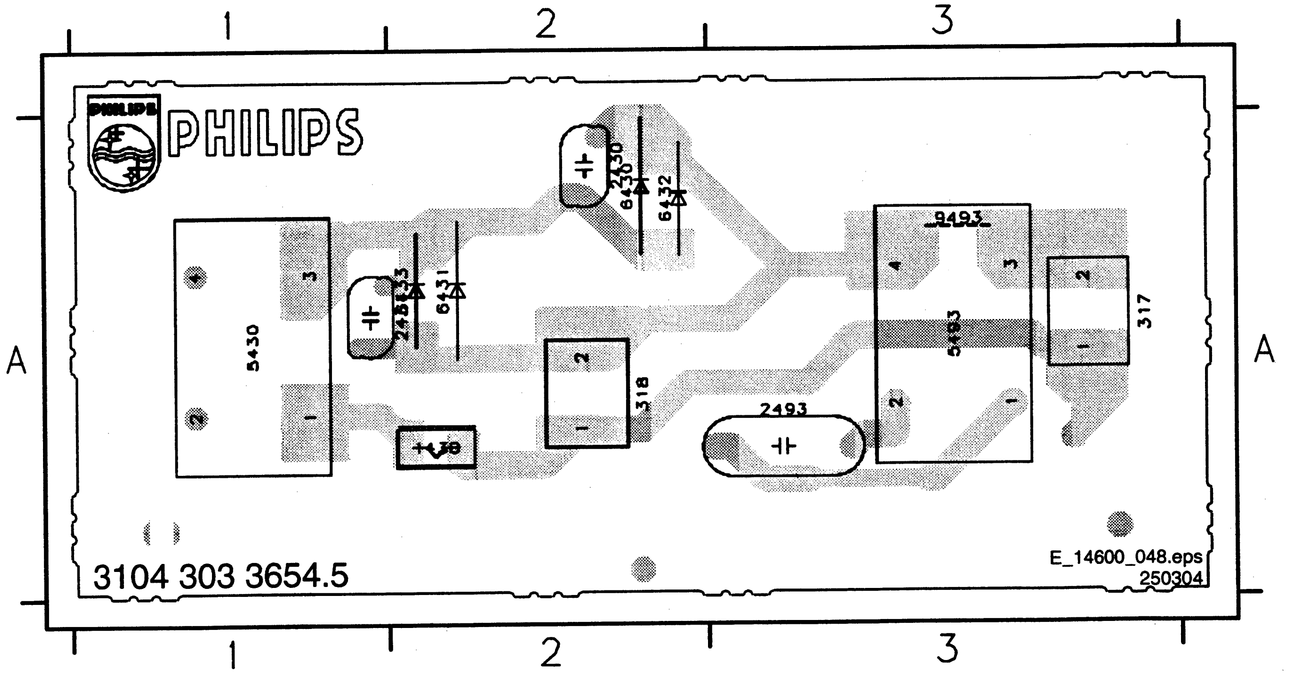
DC Shift Panel


G DC-SHIFT
G
318
N.C.
1
2
TO 1419
DAF
317
9493
1430
400mA
MP 40
5430
4
5493
3
1
CU15
2
2493
68n
6432
BYD33V
6430
BY228/20
2430
470p
2431
470p
6431
BY228/20
6433
BYD33V
A
B
C
1
2
3
4
3104 303 3654.5
E_14600_047.eps
250304

317	B1
318	A1
1430	A3
2430	B3
2431	B4
2493	B2
5430	A3
5493	B2
6430	B3
6431	B4
6432	B3
6433	B4

Layout DC Shift Panel

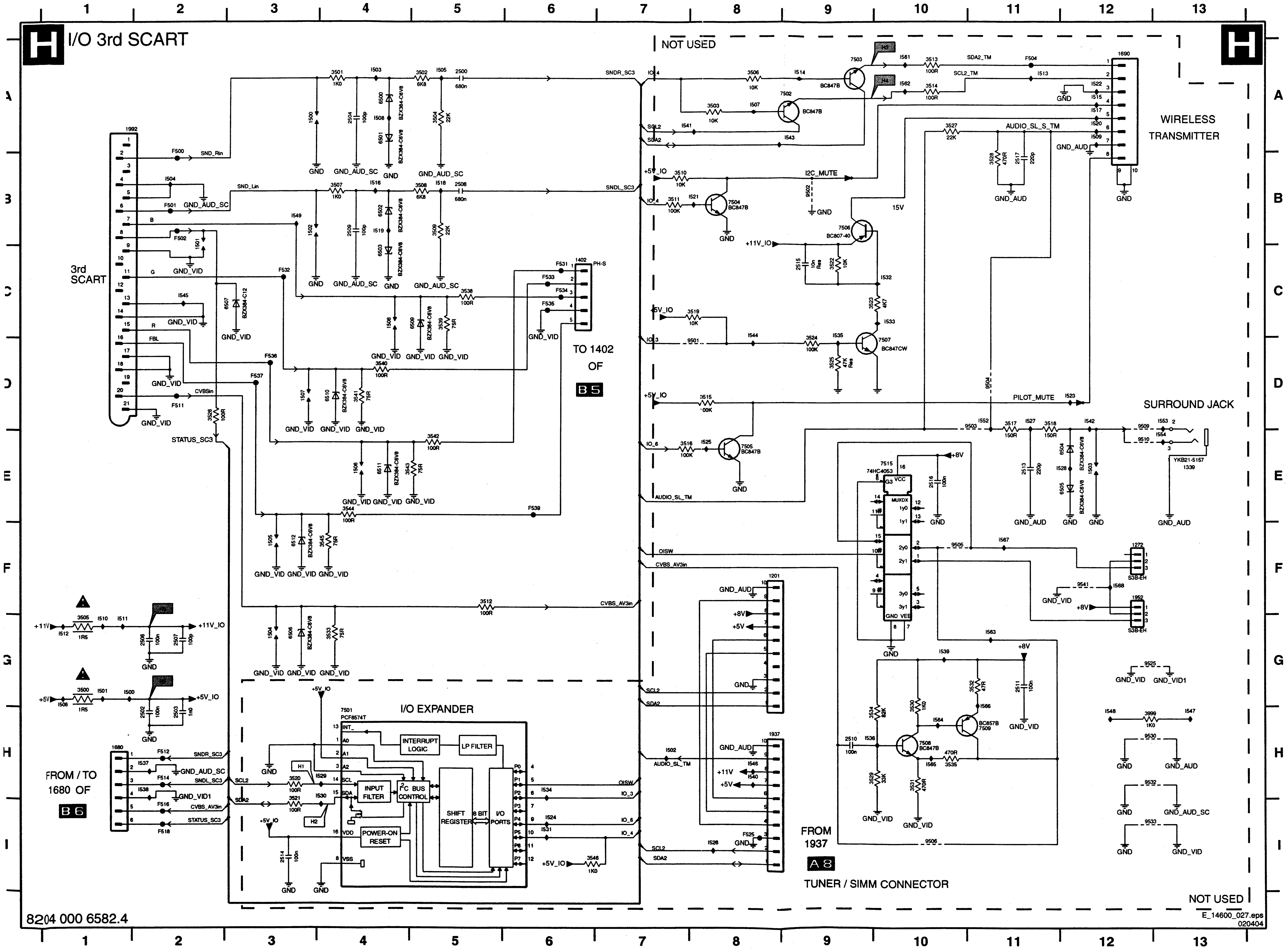
317	A3	2430	A2	5430	A1	6431	A2	9493	A3
318	A2	2431	A1	5493	A3	6432	A2		
1430	A2	2493	A3	6430	A2	6433	A2		


1
2
3
PHILIPS
2430
6430
6432
5430
2431
6433
6431
318
1430
2493
9493
5493
317
A
A
3104 303 3654.5
E_14600_048.eps
250304
1
2
3

Personal Notes:

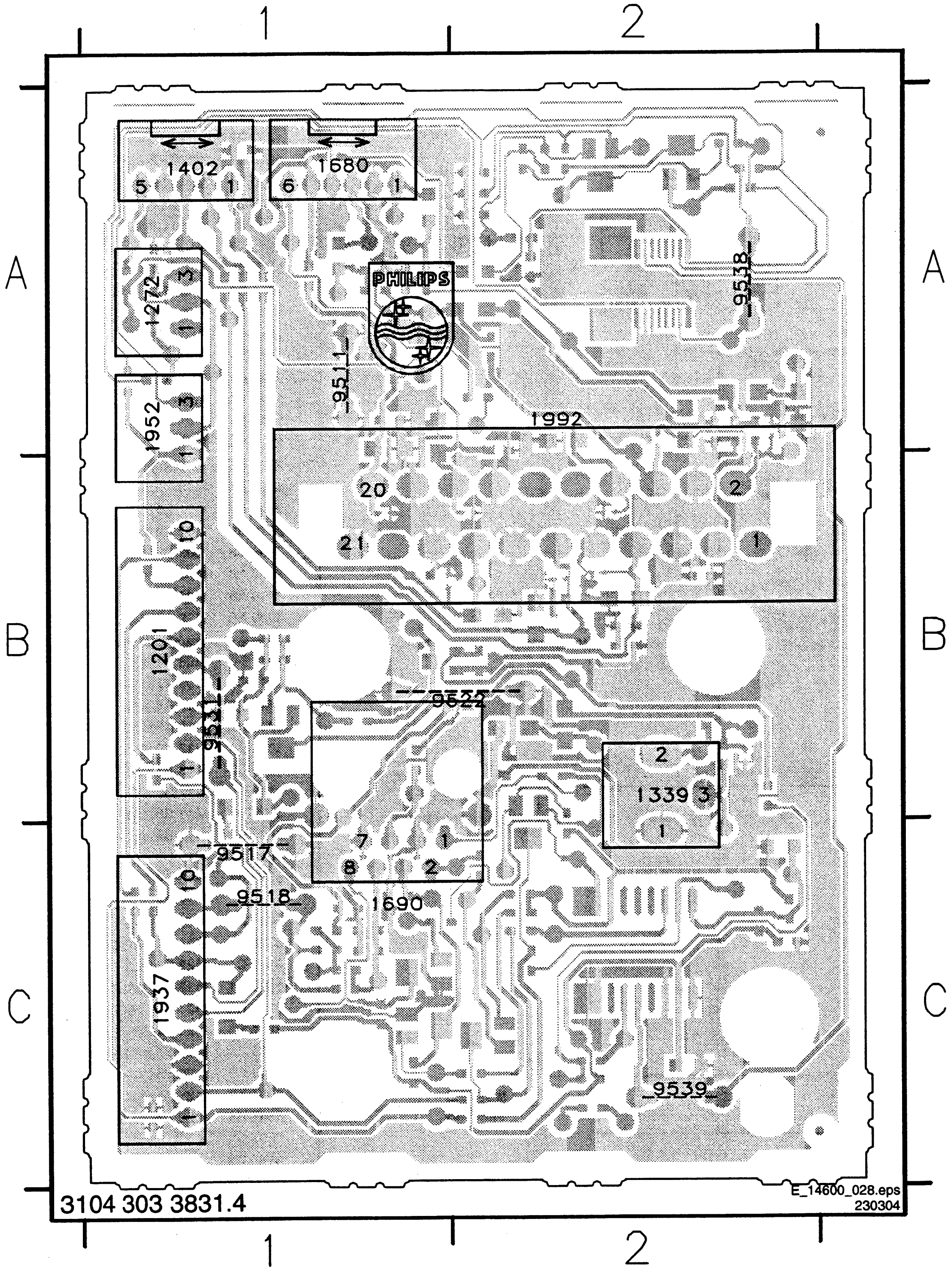
E_06532_012.eps
130204

I/O 3rd Scart


H
I/O 3rd SCART
NOT USED
WIRELESS TRANSMITTER
SURROUND JACK
3rd SCART
TO 1402 OF B5
I/O EXPANDER
INTERRUPT LOGIC
LP FILTER
INPUT FILTER
I²C BUS CONTROL
SHIFT REGISTER
8 BIT
I/O PORTS
POWER-ON RESET
FROM / TO 1680 OF B6
FROM 1937 A8
TUNER / SIMM CONNECTOR
SND_Rin
SND_Lin
SNDR_SC3
SNDL_SC3
GND_AUD_SC
GND_VID
STATUS_SC3
CVBS_AV3in
I2C_MUTE
PILOT_MUTE
AUDIO_SL_S_TM
AUDIO_SL_TM
SDA2_TM
SCL2_TM
OISW
+11V_IO
+5V_IO
7501 PCF8574T
7515 74HC4053
YKB21-5157
1339
8204 000 6582.4
E_14600_027.eps
020404

1201	F8
1272	F12
1339	E13
1402	C6
1500	A3
1501	B2
1502	B3
1503	E12
1504	G3
1505	F3
1506	E4
1507	D3
1508	C4
1680	H1
1690	A12
1937	H8
1952	F12
1992	A2
2500	A5
2502	H2
2503	H2
2504	A4
2506	G2
2507	G2
2508	B5
2509	B4
2510	H9
2511	G11
2513	E11
2514	I3
2515	C9
2516	E10
2517	B11
3500	G1
3501	A4
3502	A5
3503	A8
3504	A5
3505	G1
3506	A8
3507	B4
3508	B5
3509	B5
3510	B7
3511	B7
3512	F5
3513	A10
3514	A10
3515	D8
3516	E7
3517	D11
3518	D11
3519	C8
3520	H3
3521	I3
3522	C9
3523	C9
3524	D9
3525	D9
3526	D2
3527	A10
3528	B11
3529	H10
3530	G10
3531	H10
3532	G11
3533	G4
3534	H10
3535	H10
3538	C5
3539	C5
3540	D4
3541	D4
3542	E5
3543	E4
3544	E4
3545	F4
3546	I6
3999	H12
6500	A4
6501	A4
6502	B4
6503	C4
6504	E12
6505	E12
6506	G3
6507	C2
6509	C5
6510	D4
6511	E4
6512	F3
7501	H4
7502	A8
7503	A9
7504	B8
7505	E8
7506	B9
7507	D10
7508	H10
7509	H11
7515	E10
9501	D8
9502	B9
9503	D11
9504	D11
9505	F10
9506	I10
9509	D12
9510	E12
9525	G12
9530	H12
9532	H12
9533	I12
9541	F12
F500	B2
F501	B2
F502	B2
F504	A11
F511	D2
F512	H2
F514	H2
F516	I2
F518	I2
F525	I8
F531	C6
F532	C3
F533	C6
F534	C6
F535	C6
F536	D3
F537	D3
F539	E6
I500	G1
I501	G1
I502	H7
I503	A4
I504	B2
I505	A5
I506	G1
I507	A8
I508	A4
I509	A12
I510	G1
I511	G1
I512	G1
I513	A11
I514	A9
I515	A12
I516	B4
I517	A12
I518	B5
I519	B4
I520	A12
I521	B8
I522	A12
I523	D12
I524	I6
I525	E8
I526	I8
I527	D11
I528	E12
I529	H4
I530	H4
I531	I6
I532	C10
I533	C10
I534	H6
I535	C9
I536	H9
I537	H2
I538	H2
I539	G10
I540	H8
I541	A7
I542	D12
I543	A9
I544	C8
I545	C2
I546	H8
I547	H13
I548	H12
I549	B3
I552	D11
I553	D13
I554	E13
I561	A10
I562	A10
I563	G11
I564	H10
I565	H10
I566	G11
I567	F11
I568	F12

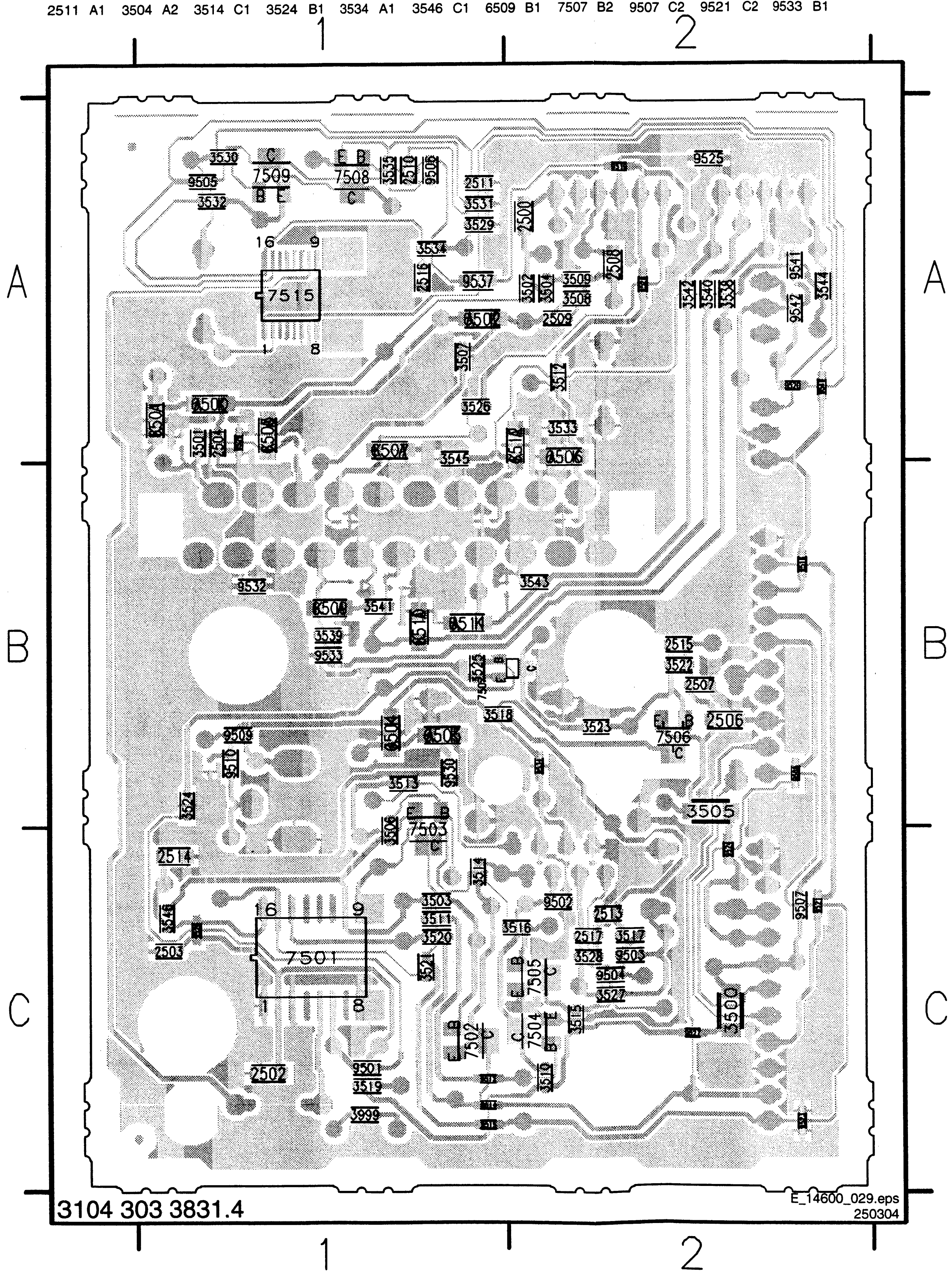
Layout I/O 3rd Scart (Top Side)


1
2
A
B
C
1402
5
1
1680
6
1
1272
3
1
PHILIPS
9511
9538
1952
3
1
1992
20
2
21
1
1201
10
1
9531
9522
1339
2
3
1
1690
7
1
8
2
9517
9518
1937
10
9539
3104 303 3831.4
E_14600_028.eps
230304

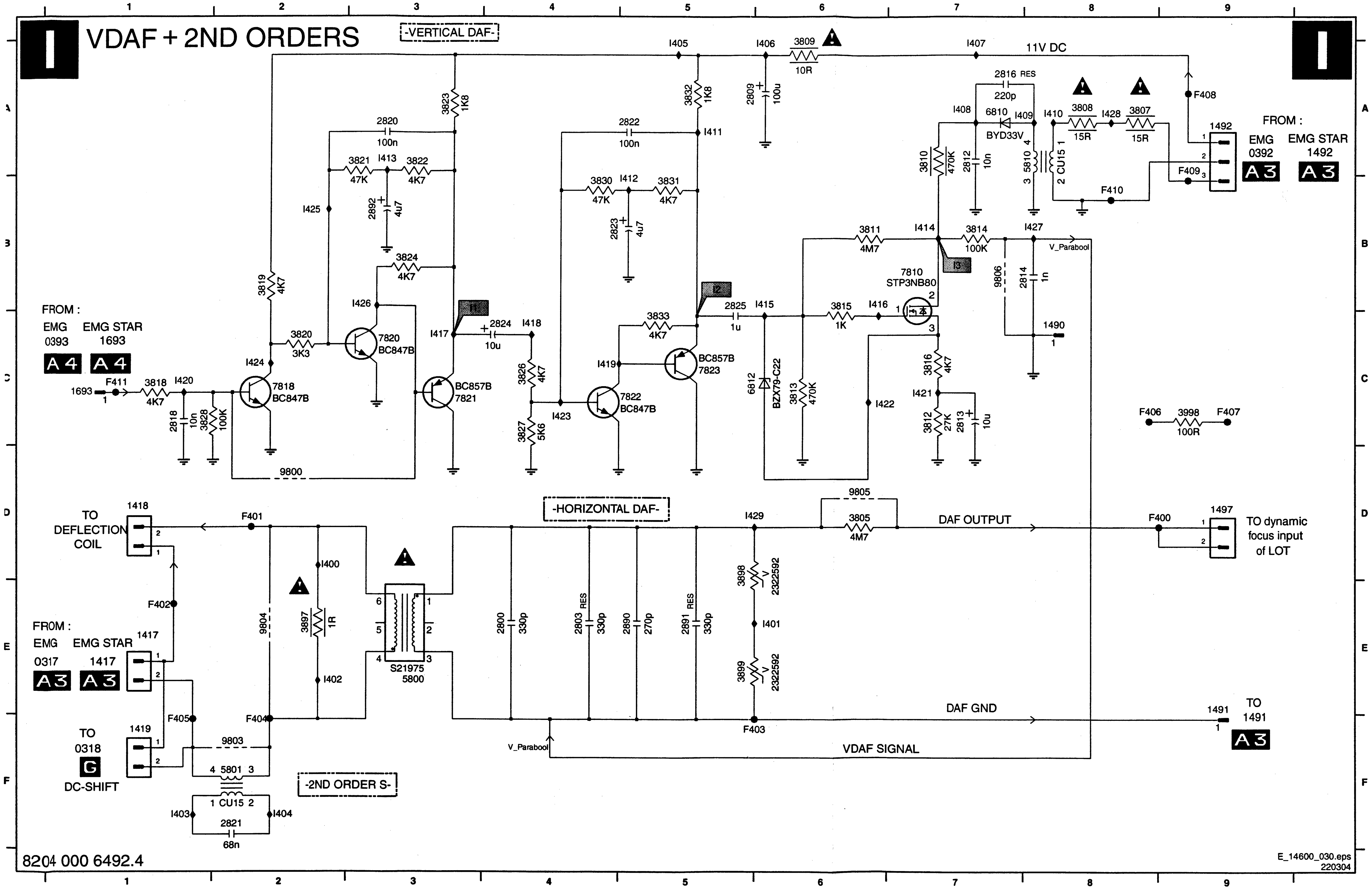
1201	B1
1272	A1
1339	B2
1402	A1
1680	A1
1690	B1
1937	C1
1952	A1
1992	A2
9511	A1
9517	C1
9518	C1
9522	B2
9531	B1
9538	A2
9539	C2

Layout I/O 3rd Scart (Bottom Side)

2500	A2	2513	C2	3505	B2	3515	C2	3525	B1	3535	A1	3999	C1	6510	B1	7508	A1	9508	B2	9523	C2	9534	B2
2502	C1	2514	C1	3506	C1	3516	C2	3526	A1	3538	A2	6500	A1	6511	B2	7509	A1	9509	B1	9524	C2	9537	A1
2503	C1	2515	B2	3507	A1	3517	C2	3527	C2	3539	B1	6501	A1	6512	A2	7515	A1	9510	B1	9525	A2	9540	A2
2504	A1	2516	A1	3508	A2	3518	B1	3528	C2	3540	A2	6502	A1	7501	C1	9501	C1	9512	C1	9526	C1	9541	A2
2506	B2	2517	C2	3509	A2	3519	C1	3529	A1	3541	B1	6503	A1	7502	C1	9502	C2	9514	C1	9527	C2	9542	A2
2507	B2	3500	C2	3510	C2	3520	C1	3530	A1	3542	A2	6504	B1	7503	C1	9503	C2	9515	C1	9528	A2		
2508	A2	3501	A1	3511	C1	3521	C1	3531	A1	3543	B2	6505	B1	7504	C2	9504	C2	9516	B2	9529	A1		
2509	A2	3502	A2	3512	A2	3522	B2	3532	A1	3544	A2	6506	A2	7505	C2	9505	A1	9519	A2	9530	B1		
2510	A1	3503	C1	3513	B1	3523	B2	3533	A2	3545	A1	6507	B1	7506	B2	9506	A1	9520	A2	9532	B1		
2511	A1	3504	A2	3514	C1	3524	B1	3534	A1	3546	C1	6509	B1	7507	B2	9507	C2	9521	C2	9533	B1		

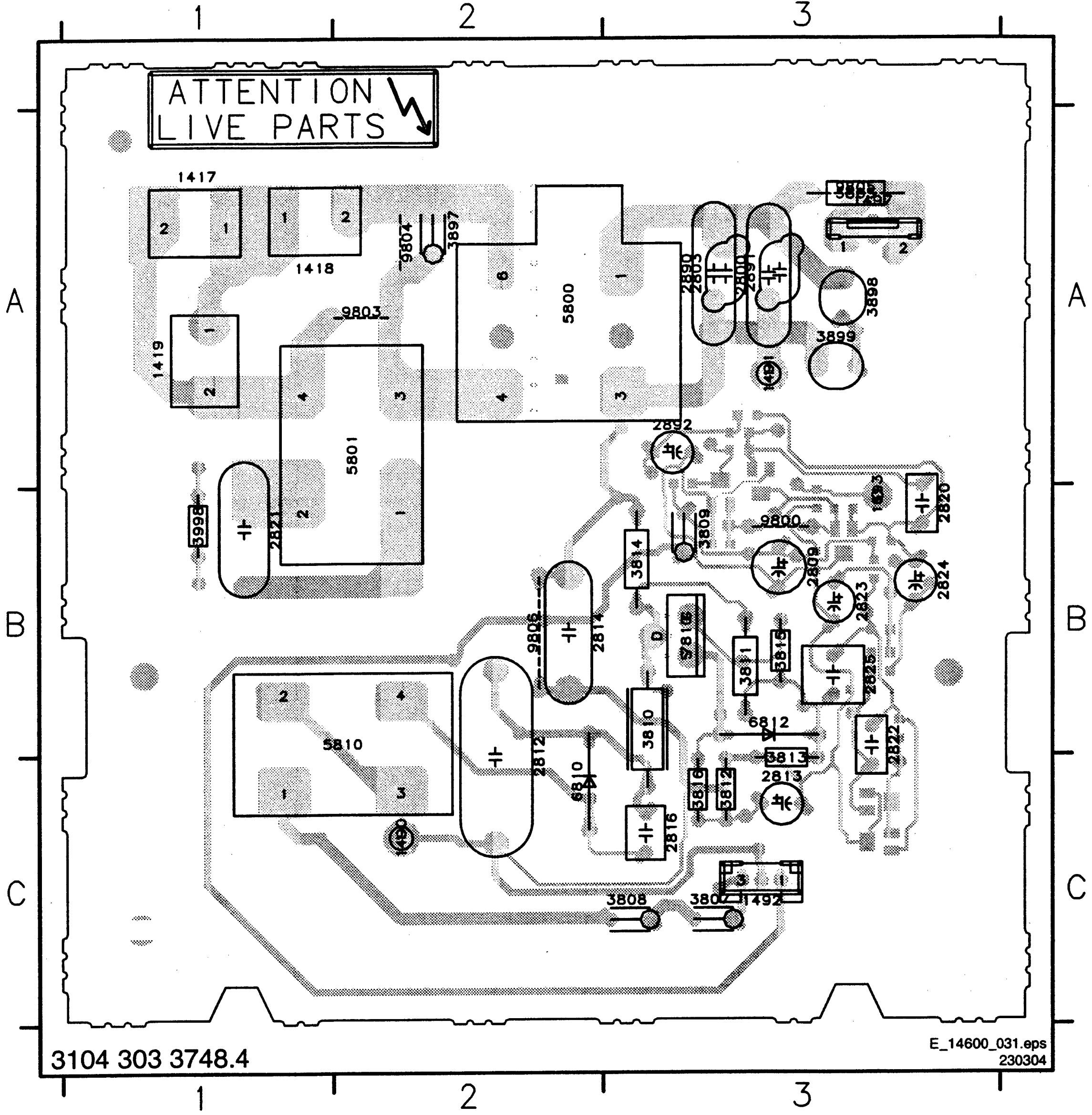

1
2
A
B
C
3530
7509
7508
9505
3532
16
9
7515
8
9525
2500
9537
6502
2509
6500
6504
6506
6505
3543
3532
6509
3541
3539
9533
2515
3522
2507
2506
7506
3505
9509
2514
16
9
7501
1
8
7503
7505
7504
7502
3500
2503
2502
9501
3519
3999
3104 303 3831.4
E_14600_029.eps
250304

VDAF Panel + 2nd Orders


I
VDAF + 2ND ORDERS
-VERTICAL DAF-
-HORIZONTAL DAF-
-2ND ORDER S-
11V DC
FROM :
EMG EMG STAR
0393 1693
A4 A4
FROM :
EMG EMG STAR
0392 1492
A3 A3
TO DEFLECTION COIL
FROM :
EMG EMG STAR
0317 1417
A3 A3
TO 0318
G
DC-SHIFT
TO dynamic focus input of LOT
TO 1491
A3
DAF OUTPUT
DAF GND
VDAF SIGNAL
V_Parabool
7818 BC847B
7820 BC847B
7821 BC857B
7822 BC847B
7823 BC857B
7810 STP3NB80
6810 BYD33V
6812 BZX79-C22
5810 CU15
5800 S21975
5801 CU15
3809 10R
3808 15R
3807 15R
3805 4M7
3998 100R
3897 1R
3898 2322592
3899 2322592
8204 000 6492.4
E_14600_030.eps
220304

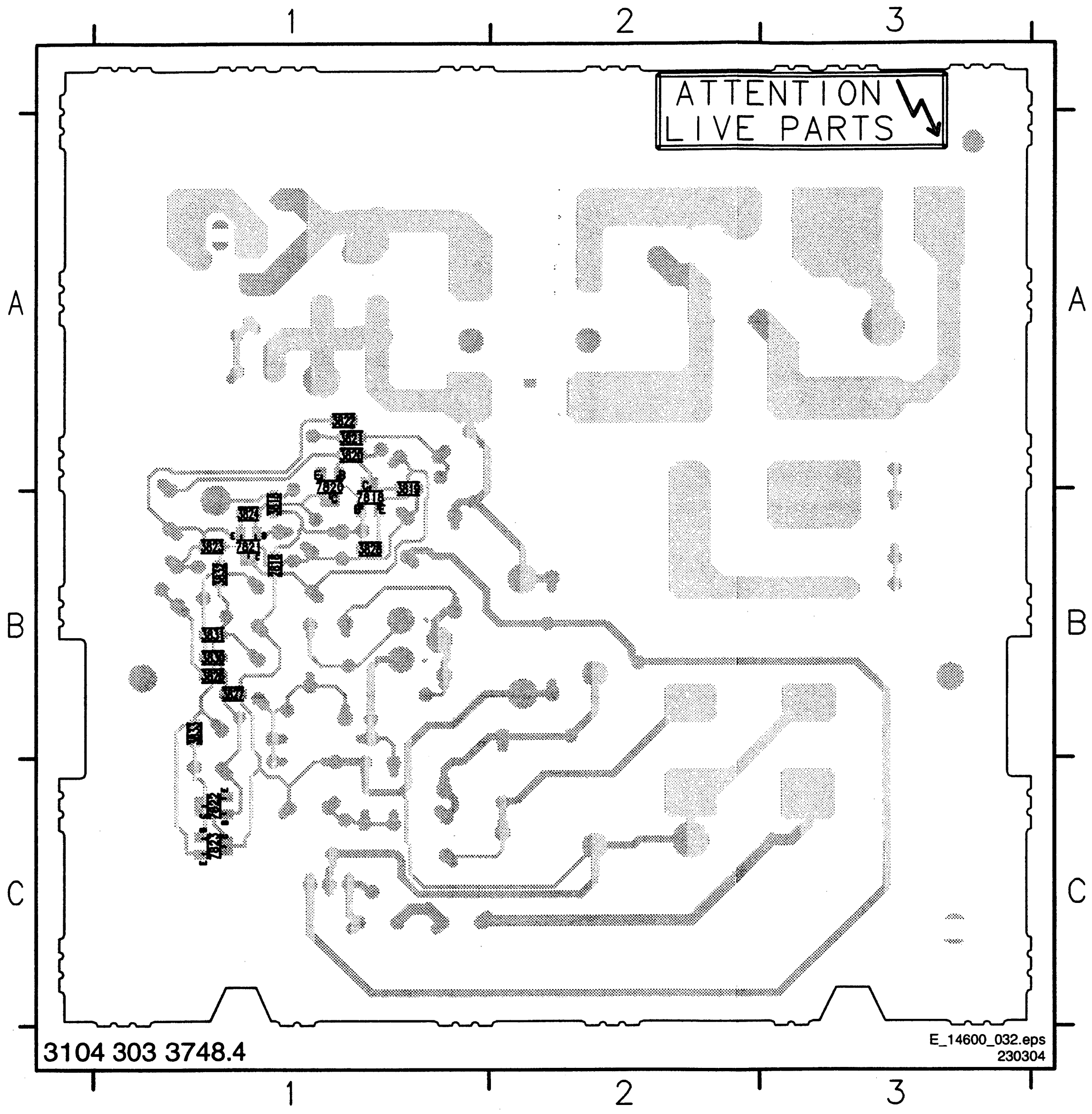
1417 E1	7818 C2
1418 D1	7820 C3
1419 F1	7821 C3
1490 C8	7822 C5
1491 E9	7823 C5
1492 A9	9800 D2
1497 D9	9803 F2
1693 C1	9804 E2
2800 E4	9805 D6
2803 E4	9806 B7
2809 A5	F400 D9
2812 A7	F401 D2
2813 C7	F402 E1
2814 B8	F403 F6
2816 A7	F404 F2
2818 C1	F405 F1
2820 A3	F406 C8
2821 F2	F407 C9
2822 A5	F408 A9
2823 B4	F409 A9
2824 C4	F410 B8
2825 B5	F411 C1
2890 E5	I400 D2
2891 E5	I401 E6
2892 B3	I402 E2
3805 D6	I403 F1
3807 A8	I404 F2
3808 A8	I405 A5
3809 A6	I406 A6
3810 A7	I407 A7
3811 B6	I408 A7
3812 C7	I409 A7
3813 C6	I410 A8
3814 B7	I411 A5
3815 B6	I412 B5
3816 C7	I413 A3
3818 C1	I414 B7
3819 B2	I415 B6
3820 C2	I416 B6
3821 A3	I417 C3
3822 A3	I418 C4
3823 A3	I419 C4
3824 B3	I420 C1
3826 C4	I421 C7
3827 C4	I422 C6
3828 C1	I423 C4
3830 B4	I424 C2
3831 B5	I425 B2
3832 A5	I426 B3
3833 C5	I427 B8
3897 E2	I428 A8
3898 D5	I429 D6
3899 E5	
3998 C9	
5800 E3	
5801 F2	
5810 A8	
6810 A7	
6812 C6	
7810 B7	

Layout VDAF Panel (Top Side)


1
2
3
A
B
C
ATTENTION
LIVE PARTS
1417
1418
1419
5800
5801
5810
9803
9804
3897
9805
3805
2890
2800
2891
2803
3898
3899
1491
2892
3809
9800
1693
2820
2809
2823
2824
3814
9806
2814
7810
3811
3815
2825
2822
6812
3810
2812
6810
3813
2813
3816
3812
2816
1490
3808
3807
1492
3998
2821
3104 303 3748.4
E_14600_031.eps
230304

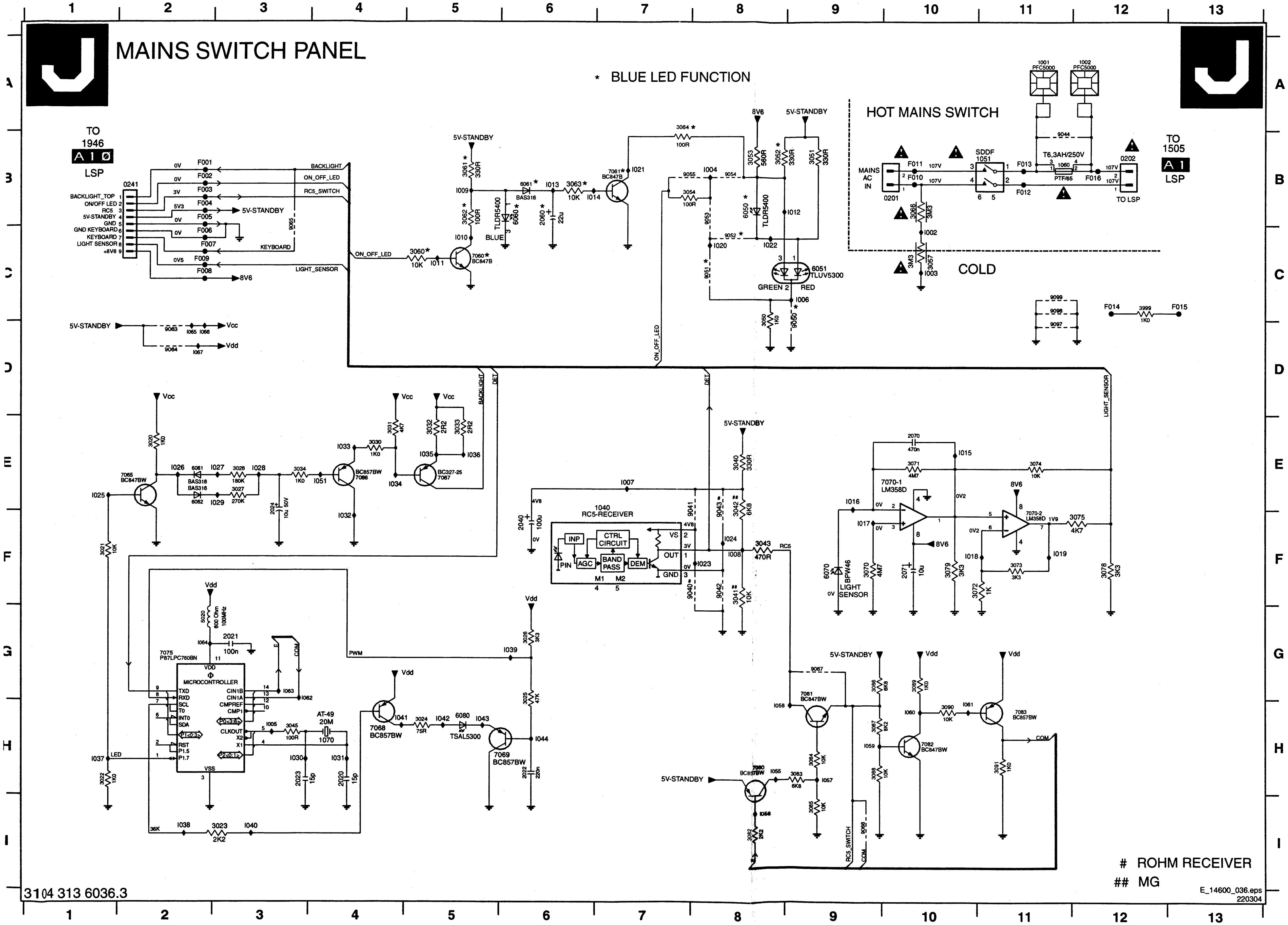
1417	A1
1418	A1
1419	A1
1490	C2
1491	A3
1492	C3
1497	A3
1693	B3
2800	A3
2803	A3
2809	B3
2812	C2
2813	C3
2814	B3
2816	C3
2820	B3
2821	B1
2822	B3
2823	B3
2824	B3
2825	B3
2890	A3
2891	A3
2892	A3
3805	A3
3807	C3
3808	C3
3809	B3
3810	B3
3811	B3
3812	C3
3813	C3
3814	B3
3815	B3
3816	C3
3897	A2
3898	A3
3899	A3
3998	B1
5800	A2
5801	A1
5810	B2
6810	C2
6812	B3
7810	B3
9800	B3
9803	A2
9804	A2
9805	A3
9806	B2

Layout VDAF Panel (Bottom Side)


1
2
3
A
B
C
ATTENTION
LIVE PARTS
3104 303 3748.4
E_14600_032.eps
230304

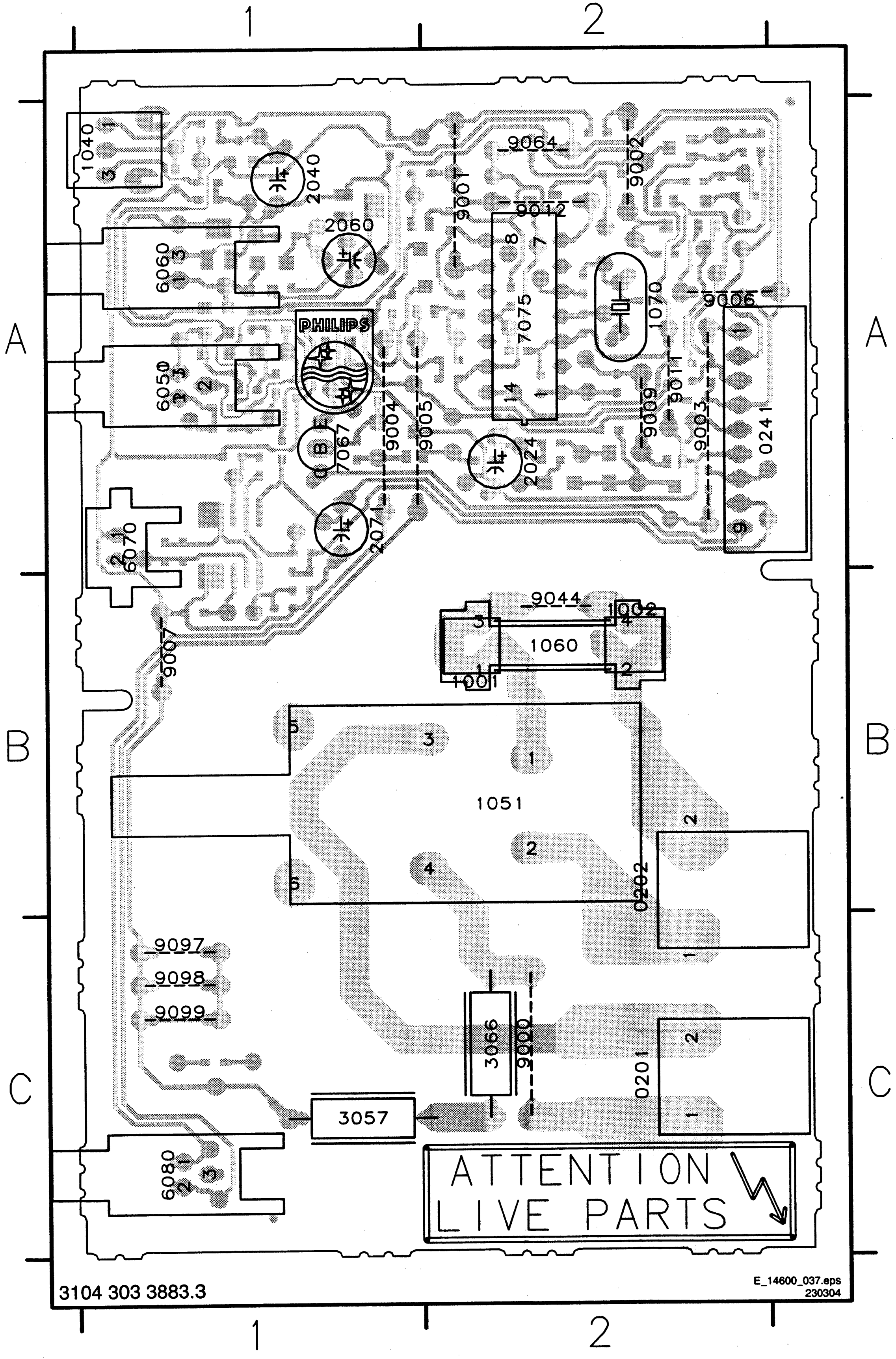
2818	B1
3818	B1
3819	A1
3820	A1
3821	A1
3822	A1
3823	B1
3824	B1
3826	B1
3827	B1
3828	B1
3830	B1
3831	B1
3832	B1
3833	B1
7818	B1
7820	A1
7821	B1
7822	C1
7823	C1

Mains Switch Panel (FL13)


J
MAINS SWITCH PANEL
* BLUE LED FUNCTION
HOT MAINS SWITCH
COLD
TO 1946 A10 LSP
TO 1505 A1 LSP
MAINS AC IN
0201
0202
TO LSP
SDDF 1051
1001 PFC5000
1002 PFC5000
T6,3AH/250V
1060 PTF/65
9044
F010
F011
F012
F013
F016
107V
3066 3M3
3057 3M3
I002
I003
0241
BACKLIGHT_TOP 1
ON/OFF LED 2
RC5 3
5V-STANDBY 4
GND 5
GND KEYBOARD 6
KEYBOARD 7
LIGHT SENSOR 8
+8V6 9
F001
F002
F003
F004
F005
F006
F007
F008
F009
BACKLIGHT
ON_OFF_LED
RC5_SWITCH
5V-STANDBY
KEYBOARD
LIGHT_SENSOR
8V6
9065
5V-STANDBY
9063
9064
I065
I066
I067
Vcc
Vdd
3060* 10K
I011
7060* BC847B
3061* 330R
3062* 100R
I009
I010
6061* BAS316
TLDR5400
BLUE
6060*
2060* 22u
I013
3063* 10K
I014
7061* BC847B
I021
3064* 100R
9055
I004
9054
3054 100R
9053*
9052*
I020
I022
9051*
3053 560R
3052* 330R
3051 330R
6050*
I012
6051 TLUV5300
GREEN
RED
I006
3050 1K0
9050*
9099
9098
9097
F014
3999 1K0
F015
3020 1K0
7065 BC847BW
I025
3021 10K
I026
6081 BAS316
6082 BAS316
I027
3028 180K
3027 270K
I029
I028
2024 10u 50V
3034 1K0
I051
7066 BC857BW
I032
I033
3030 1K0
3031 4K7
3032 2R2
3033 2R2
I035
I036
I034
7067 BC327-25
BACKLIGHT
DET
ON_OFF_LED
I007
4V8
2040 100u
1040 RC5-RECEIVER
INP
CTRL CIRCUIT
AGC
BAND PASS
DEM
PIN
VS
OUT
GND
M1
M2
9041
9043*
3042 6K8
3040 330R
I024
3043 470R
RC5
I023
I008
9040*
9042
3041 10K
# ROHM RECEIVER
## MG
LIGHT_SENSOR
2070 470n
I015
3071 4M7
3074 10K
7070-1 LM358D
7070-2 LM358D
I016
I017
0V2
1V9
3075 4K7
6070 BPW46 LIGHT SENSOR
3070 4M7
2071 10u
3079 3K3
I018
3073 3K3
I019
3072 1K
3078 3K3
8V6
5020 600 Ohm 100MHz
I064
2021 100n
7075 P87LPC760BN
MICROCONTROLLER
TXD
RXD
SCL
T0
INT0
SDA
RST
P1.5
P1.7
CIN1B
CIN1A
CMPREF
CMP1
CLKOUT
X2
X1
VDD
VSS
I063
I062
COM
PWM
I039
3026 3K3
3025 47K
I044
LED
I037
3022 1K0
I005
3045 100R
AT-49 20M 1070
I030
I031
2023 15p
2020 15p
7068 BC857BW
I041
3024 75R
I042
6080 TSAL5300
I043
7069 BC857BW
2022 220n
I038
3023 2K2
I040
36K
9067
7081 BC847BW
I058
3086 6K8
3087 8K2
I059
3088 10K
3089 1K0
I060
7082 BC847BW
3090 10K
I061
7083 BC857BW
3091 1K0
7080 BC857BW
I055
3083 6K8
I057
3084 10K
3085 10K
I056
3082 2K2
RC5_SWITCH
COM
9066
3104 313 6036.3
E_14600_036.eps 220304

0201	B10
0202	B12
0241	B2
1001	A11
1002	A12
1040	E6
1051	B11
1060	B11
1070	H4
2020	H4
2021	G3
2022	H6
2023	H3
2024	E3
2040	F6
2060	B6
2070	E10
2071	F10
3020	E2
3021	F1
3022	H1
3023	I3
3024	H5
3025	G6
3026	G6
3027	E3
3028	E3
3030	E4
3031	E4
3032	E5
3033	E5
3034	E3
3040	E8
3041	F8
3042	E8
3043	F8
3045	H3
3050	C8
3051	B9
3052	B8
3053	B8
3054	B7
3057	C10
3060	C5
3061	B5
3062	B5
3063	B6
3064	A7
3066	B10
3070	F9
3071	E10
3072	F11
3073	F11
3074	E11
3075	F12
3078	F12
3079	F10
3082	I8
3083	H9
3084	H9
3085	I9
3086	G9
3087	H9
3088	H9
3089	G10
3090	H10
3091	H11
3999	C12
5020	G2
6050	B8
6051	C9
6060	B6
6061	B6
6070	F9
6080	H5
6081	E2
6082	E2
7060	C5
7061	B7
7065	E2
7066	E4
7067	E5
7068	H4
7069	H6
7070-1	E9
7070-2	F11
7075	G2
7080	H8
7081	G9
7082	H10
7083	H11
9040	F8
9041	E8
9042	F8
9043	E8
9044	B11
9050	C9
9051	C8
9052	C8
9053	B8
9054	B8
9055	B7
9063	D2
9064	D2
9065	B3
9066	I9
9067	G9
9097	D11
9098	C11
9099	C11

Layout Mains Switch Panel (Top Side)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A
B
C
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6050
PHILIPS
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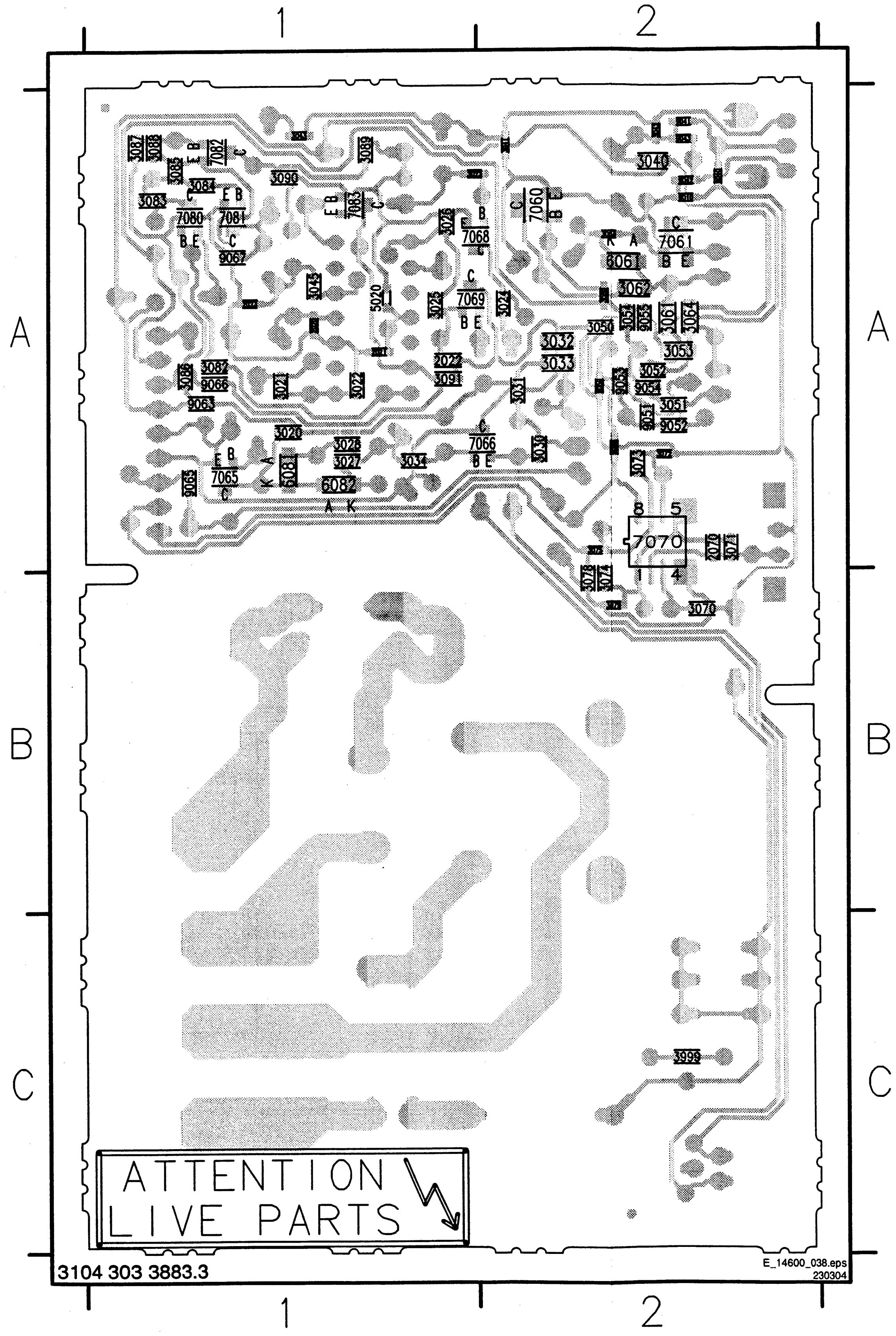
9005
2024
2071
7075
9001
9064
9012
9002
1070
9006
9009
9011
9003
0241
6070
9007
9044
1002
1060
1001
1051
0202
9097
9098
9099
3066
9000
0201
3057
6080
ATTENTION
LIVE PARTS
3104 303 3883.3
E_14600_037.eps
230304

0201	C2
0202	B2
0241	A2
1001	B1
1002	B2
1040	A1
1051	B1
1060	B1
1070	A2
2024	A2
2040	A1
2060	A1
2071	A1
3057	C1
3066	C2
6050	A1
6051	A1
6060	A1
6070	B1
6080	C1
7067	A1
7075	A2
9000	C2
9001	A2
9002	A2
9003	A2
9004	A1
9005	A2
9006	A2
9007	B1
9009	A2
9011	A2
9012	A2
9044	B2
9064	A2
9097	C1
9098	C1
9099	C1

Layout Mains Switch Panel (Bottom Side)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A
B
C
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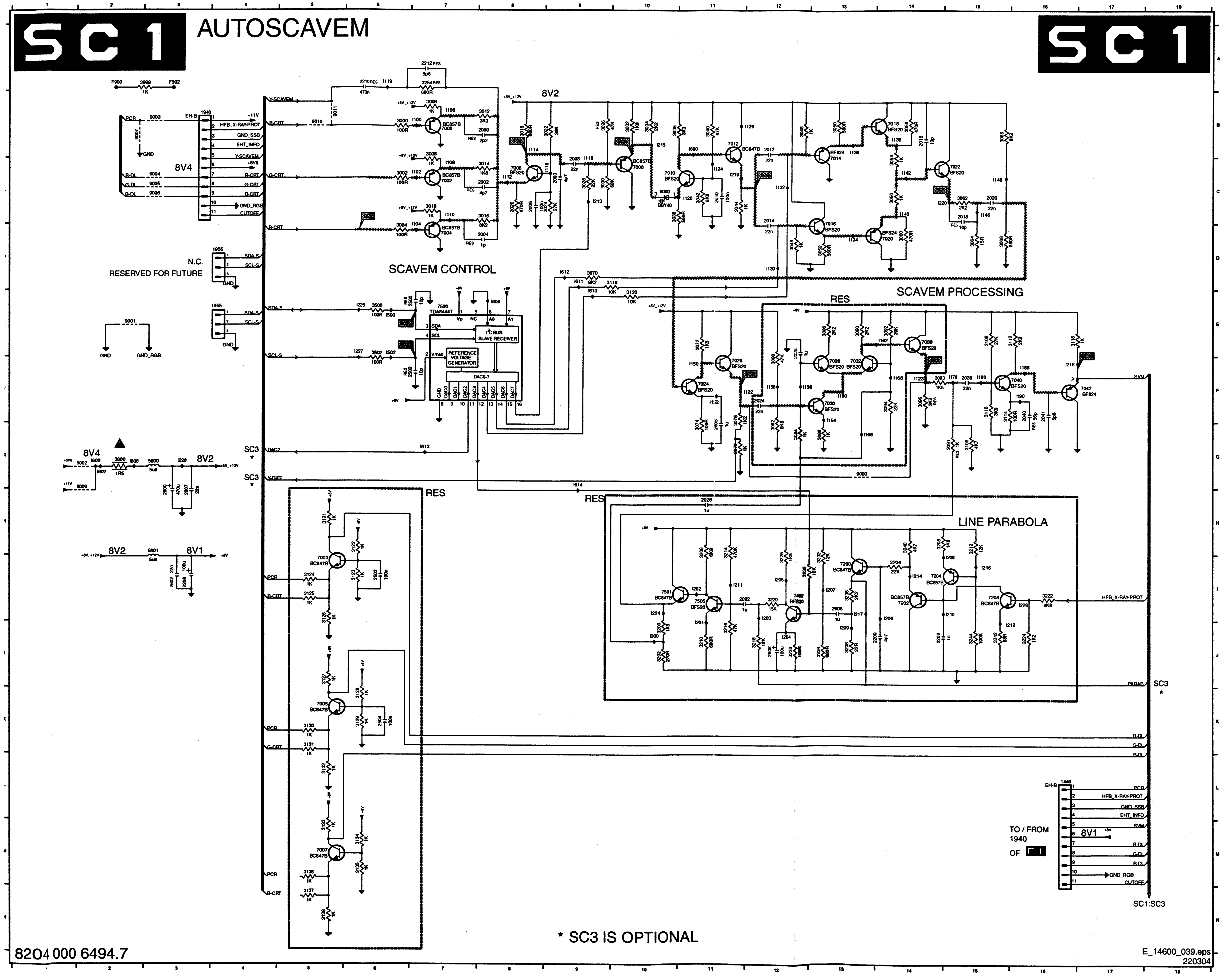
3089
3029
7068
7060
3040
7061
3061
3062
3050
3063
3064
5020
3025
7069
3024
3027
3043
3023
3032
3033
3053
3052
3054
3051
3052
3086
3082
3021
3022
2022
3091
3031
3020
3028
3027
7066
3030
3065
7065
6081
3034
6082
3073
7070
3070
3071
3078
3074
3070
3999
ATTENTION
LIVE PARTS
3104 303 3883.3
E_14600_038.eps
230304

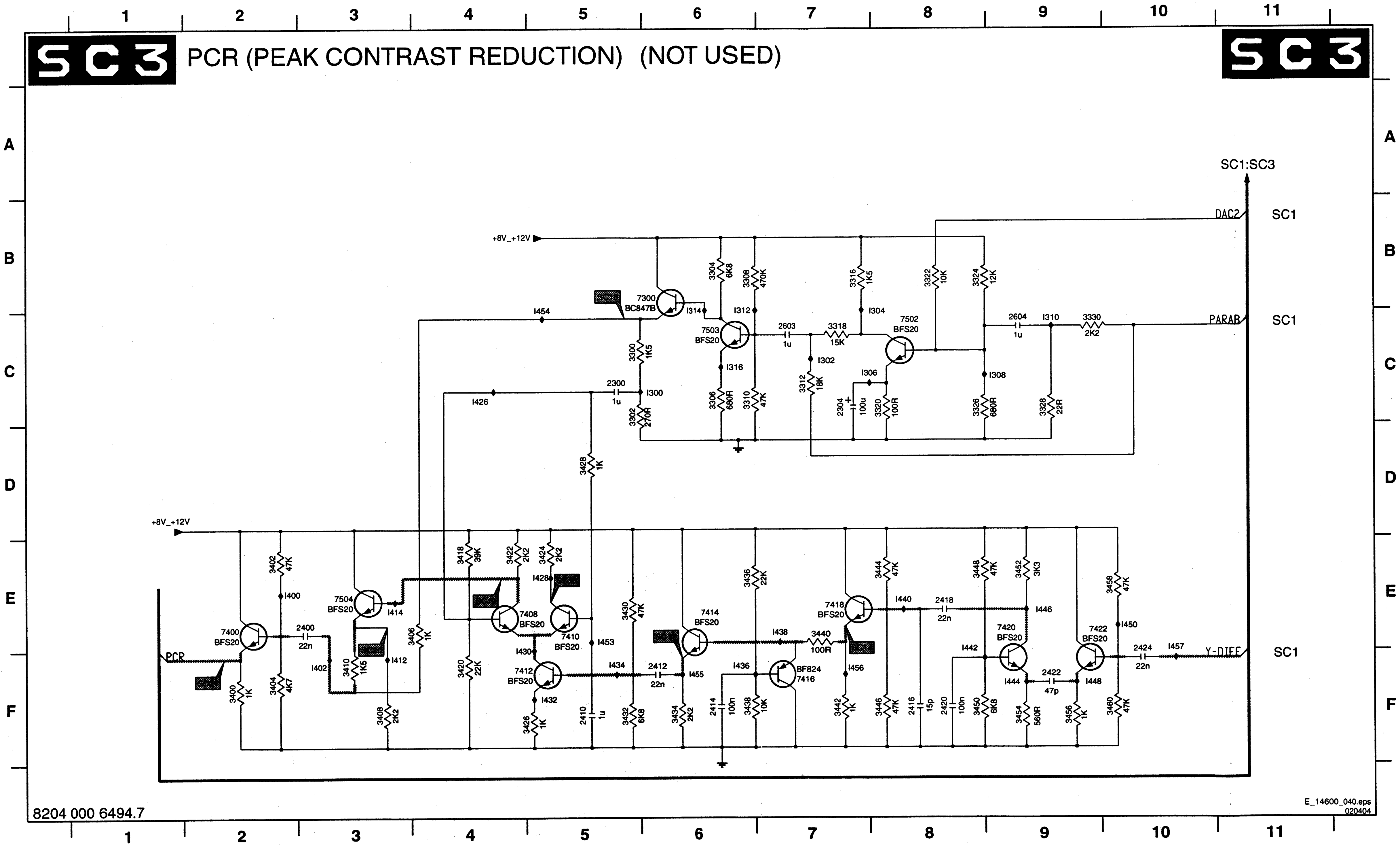
2020	A1
2021	A1
2022	A1
2023	A1
2070	A2
3020	A1
3021	A1
3022	A1
3023	A1
3024	A2
3025	A1
3026	A1
3027	A1
3028	A1
3030	A2
3031	A2
3032	A2
3033	A2
3034	A1
3040	A2
3041	A2
3042	A2
3043	A1
3045	A1
3050	A2
3051	A2
3052	A2
3053	A2
3054	A2
3060	A2
3061	A2
3062	A2
3063	A2
3064	A2
3070	B2
3071	A2
3072	A2
3073	A2
3074	B2
3075	A2
3078	B2
3079	B2
3082	A1
3083	A1
3084	A1
3085	A1
3086	A1
3087	A1
3088	A1
3089	A1
3090	A1
3091	A1
3999	C2
5020	A1

Auto SCAVEM Panel


SC1
AUTOSCAVEM
SC1
SCAVEM CONTROL
SCAVEM PROCESSING
RES
LINE PARABOLA
RESERVED FOR FUTURE
N.C.
8V4
8V2
8V1
SC3
TDA8444T
I²C BUS SLAVE RECEIVER
REFERENCE VOLTAGE GENERATOR
DAC0-7
+11V
HFB_X-RAY-PROT
GND_SSB
EHT_INFO
Y-SCAVEM
+8V6
B-CRT
G-CRT
R-CRT
GND_RGB
CUTOFF
SDA-S
SCL-S
DAC2
Y-DIFF
PCR
SVM
PARAB
R-DL
G-DL
B-DL
GND
TO / FROM 1940 OF
SC1:SC3
* SC3 IS OPTIONAL
8204 000 6494.7
E_14600_039.eps
220304

1440	L16
1940	B3
1955	E4
1956	D4
2000	B8
2002	C8
2003	C9
2004	D8
2006	C8
2008	C9
2010	C11
2012	B12
2014	C12
2016	B14
2018	C15
2020	C15
2022	I12
2024	F12
2026	E12
2028	H11
2038	F15
2040	F16
2041	F16
2200	J14
2202	J14
2208	I3
2210	A6
2212	A7
2500	E7
2502	F7
2503	I6
2504	K6
2600	H3
2602	I3
2605	G11
2606	I13
2607	H3
2608	J12
3000	B6
3002	C6
3004	D6
3006	B7
3008	B7
3010	C7
3012	B8
3014	C8
3016	C8
3018	B8
3020	C8
3022	B9
3024	C9
3026	B9
3028	C9
3030	C9
3032	B10
3034	B10
3036	B10
3038	C10
3040	B11
3042	C11
3044	C11
3046	B12
3048	D12
3050	B13
3052	D13
3054	C14
3056	C14
3058	B14
3060	D14
3062	C15
3064	D15
3066	B15
3068	D15
3070	D9
3072	E11
3074	G11
3076	F11
3078	G11
3080	F12
3082	G12
3084	G12
3086	E13
3088	G13
3090	E13
3091	G15
3092	E14
3093	F14
3094	F14
3096	F14
3106	G15
3108	E15
3110	F15
3112	E16
3114	F15
3116	E16
3118	D10
3120	E10
3121	H5
3122	H6
3123	I6
3124	I5
3125	I5
3126	I5
3127	J5
3128	K6
3129	K6
3130	K5
3131	K5
3132	L5
3133	M5
3134	M6
3135	M6
3136	M5
3137	N5
3138	N5
3200	J10
3202	J10
3204	I14
3206	H11
3208	H14
3210	J11
3212	H15
3214	H11
3216	J11
3218	J12
3220	I12
3222	I16
3224	J16
3226	I12
3228	J12
3230	I12
3232	I13
3234	J13
3236	I13
3238	J13
3240	H14
3242	J15
3244	J15
3254	A7
3500	E6
3502	E6
3600	G2
3999	A3
5600	G3
5601	H3
6000	C10
7000	B7
7002	C7
7003	I5
7004	D7
7005	K5
7006	C8
7007	M5
7008	C10
7010	C10
7012	B11
7014	B13
7016	D13
7018	B14
7020	D14
7022	C15
7024	F11
7026	F11
7028	F13
7030	F13
7032	F13
7038	E14
7040	F16
7042	F17
7200	I13
7202	I14
7204	I14
7208	I15
7402	I12
7500	E7
7501	I10
7505	I11
9000	G13
9001	E2
9002	G2
9003	B3
9004	C3
9005	C3
9006	C3
9007	B2
9009	H2
9010	B5
9011	B5
F900	A2
F902	A3
I100	B7
I102	C7
I104	D7
I106	B7
I108	C7
I110	C7
I112	C8
I114	B8
I116	C9
I118	C9
I119	A6
I120	C11
I122	F12
I123	F14
I124	C11
I126	B12
I130	D12
I132	C12
I134	D13
I136	B13
I138	B14
I140	C14
I142	C14
I146	C15
I148	C15
I150	F11
I152	F11
I154	F13
I156	F12
I158	F12
I160	F13
I162	E14
I166	G13
I168	F14
I178	F15
I186	F15
I188	F16
I190	F16
I200	J10
I201	J11
I202	I11
I203	I12
I204	J12
I205	I12
I206	I14
I207	I13
I208	I15
I209	J13
I210	I15
I211	I11
I212	J16
I213	C9
I214	I14
I215	B10
I216	I15
I217	I13
I218	F16
I219	C11
I220	C14
I224	I10
I225	E6
I226	I16
I227	E6
I228	G3
I500	E6
I502	E6
I600	G2
I602	G2
I608	G2
I609	E8
I610	E9
I611	D9
I612	D9
I613	G7
I614	G9
I690	B11

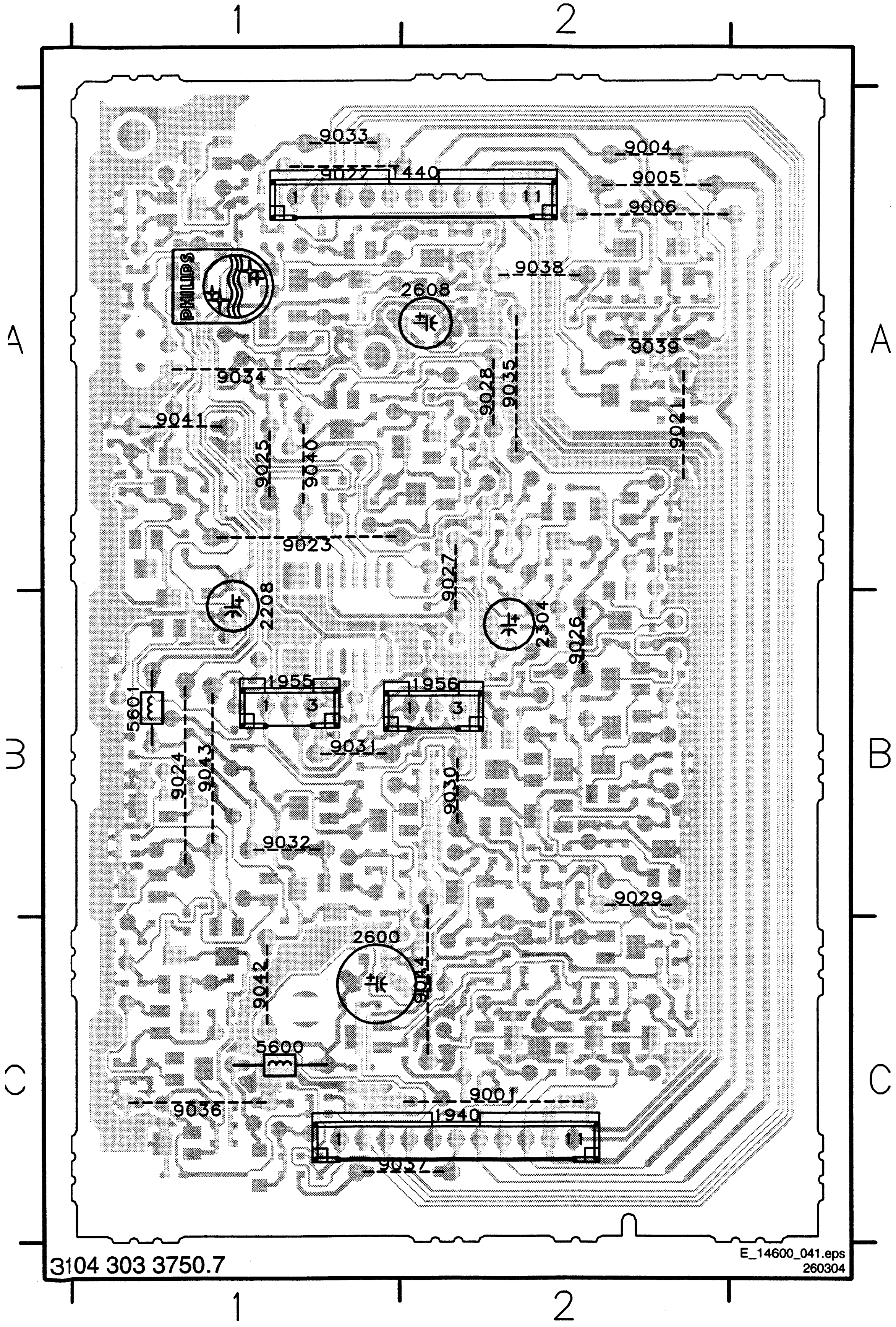
Auto SCAVEM Panel Peak Contrast Reduction


SC3
PCR (PEAK CONTRAST REDUCTION) (NOT USED)
SC3
1 2 3 4 5 6 7 8 9 10 11
A B C D E F
SC1:SC3
DAC2
SC1
PARAB
SC1
Y-DIFF
SC1
+8V_+12V
+8V_+12V
PCR
7300 BC847B
7503 BFS20
7502 BFS20
7504 BFS20
7400 BFS20
7408 BFS20
7410 BFS20
7412 BFS20
7414 BFS20
7416 BF824
7418 BFS20
7420 BFS20
7422 BFS20
3300 1K5
3302 270R
3304 6K8
3306 680R
3308 470K
3310 47K
3312 18K
3316 1K5
3318 15K
3320 100R
3322 10K
3324 12K
3326 680R
3328 22R
3330 2K2
2300 1u
2304 100u
2603 1u
2604 1u
3400 1K
3402 47K
3404 4K7
3406 1K
3408 2K2
3410 1K5
3418 39K
3420 22K
3422 2K2
3424 2K2
3426 1K
3428 1K
3430 47K
3432 6K8
3434 2K2
3436 22K
3438 10K
3440 100R
3442 1K
3444 47K
3446 47K
3448 47K
3450 6K8
3452 3K3
3454 560R
3456 1K
3458 47K
3460 47K
2400 22n
2410 1u
2412 22n
2414 100n
2416 15p
2418 22n
2420 100n
2422 47p
2424 22n
I300 I302 I304 I306 I308 I310 I312 I314 I316
I400 I402 I412 I414 I426 I428 I430 I432 I434 I436 I438 I440 I442 I444 I446 I448 I450 I453 I454 I455 I456 I457
8204 000 6494.7
E_14600_040.eps
020404

2300	C5
2304	C7
2400	E3
2410	F5
2412	F6
2414	F6
2416	F8
2418	E8
2420	F8
2422	F9
2424	F10
2603	C7
2604	C9
3300	C5
3302	C5
3304	B6
3306	C6
3308	B6
3310	C6
3312	C7
3316	B7
3318	C7
3320	C8
3322	B8
3324	B8
3326	C8
3328	C9
3330	C9
3400	F2
3402	E2
3404	F2
3406	E4
3408	F3
3410	F3
3418	E4
3420	F4
3422	E4
3424	E5
3426	F5
3428	D5
3430	E5
3432	F5
3434	F6
3436	E6
3438	F6
3440	E7
3442	F7
3444	E8
3446	F8
3448	E8
3450	F8
3452	E9
3454	F9
3456	F9
3458	E10
3460	F10
7300	B6
7400	E2
7408	E4
7410	E5
7412	F5
7414	E6
7416	F7
7418	E7
7420	E9
7422	E10
7502	C8
7503	C6
7504	E3
I300	C6
I302	C7
I304	C8
I306	C7
I308	C9
I310	C9
I312	B6
I314	B6
I316	C6
I400	E2
I402	F3
I412	F3
I414	E3
I426	C4
I428	E5
I430	E4
I432	F5
I434	F5
I436	F6
I438	E7
I440	E8
I442	E8
I444	F9
I446	E9
I448	F9
I450	E10
I453	E5
I454	C5
I455	F6
I456	F7
I457	E10

Layout Auto SCAVEM Panel (Top Side)

1440	A2
1940	C2
1955	B1
1956	B2
2208	B1
2304	B2
2600	C1
2608	A2
5600	C1
5601	B1
9001	C2
9004	A2
9005	A2
9006	A2
9021	A2
9022	A1
9023	A1
9024	B1
9025	A1
9026	B2
9027.	A2
9028	A2
9029	B2
9030	B2
9031	B1
9032	B1
9033	A1
9034	A1
9035	A2
9036	C1
9037	C1
9038	A2
9039	A2
9040	A1
9041	A1
9042	C1
9043	B1
9044	C2


1
2
A
B
C
1440
1940
1955
1956
2208
2304
2600
2608
5600
5601
PHILIPS
9001
9004
9005
9006
9021
9023
9024
9025
9026
9027
9028
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9036
9037
9038
9039
9040
9041
9042
9043
9044
3104 303 3750.7
E_14600_041.eps
260304

Layout Auto SCAVEM Panel (Bottom Side)

2000	C1
2002	C1
2003	C2
2004	C1
2006	C1
2008	C2
2010	C2
2012	C2
2014	B2
2016	B2
2018	B2
2020	B1
2022	A1
2024	B2
2026	A2
2028	A1
2038	A2
2040	A2
2041	A2
2200	A1
2202	A1
2210	C1
2212	C1
2300	B1
2400	A1
2410	B1
2412	B1
2414	B1
2416	B1
2418	C1
2420	B1
2422	C1
2424	B1
2500	B1
2502	B2
2503	A1
2504	A1
2602	B2
2603	B1
2604	A1
2605	B1
2606	A2
2607	C2
3000	C1
3002	C1
3004	C1
3006	C1
3008	C1
3010	C1
3012	C1
3014	C1
3016	C1
3018	C2
3020	C1
3022	C1
3024	C1
3026	C2
3028	C2
3030	C2
3032	C2
3034	C2
3036	C2
3038	C2
3040	C2
3042	C2
3044	C2
3046	C2
3048	B2
3050	C2
3052	B2
3054	B2
3056	B2
3058	C2
3060	B2
3062	B2
3064	B1
3066	B2
3068	B1
3070	B1
3072	B2
3074	B1
3076	B2
3078	B1
3080	B2
3082	B2
3084	A2
3086	A2
3088	B2
3090	A2
3091	A1
3092	A2
3093	A2
3094	A2
3096	A2
3106	A2
3108	A2
3110	A2
3112	A2
3114	A2
3116	A2
3118	A2
3120	A2
3121	A1
3122	A1
3123	A1
3124	A1
3125	A1
3126	A1
3127	A1
3128	A1
3129	A1
3130	A1
3131	A1
3132	A1
3133	A1
3134	A1
3135	A1
3136	A1
3137	A1
3138	A1
3200	A1
3202	A1
3204	A2
3206	A2
3208	A2
3210	A1
3212	A2
3214	A2
3216	A1
3218	A1
3220	A2
3222	A2
3224	A2
3226	A2
3228	A1
3230	A2
3232	A2
3234	A2
3236	A2
3238	A2
3240	A2
3242	A1
3244	A1
3254	C1
3300	B1
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3304	B1
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3308	B1
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3318	A1
3320	A1
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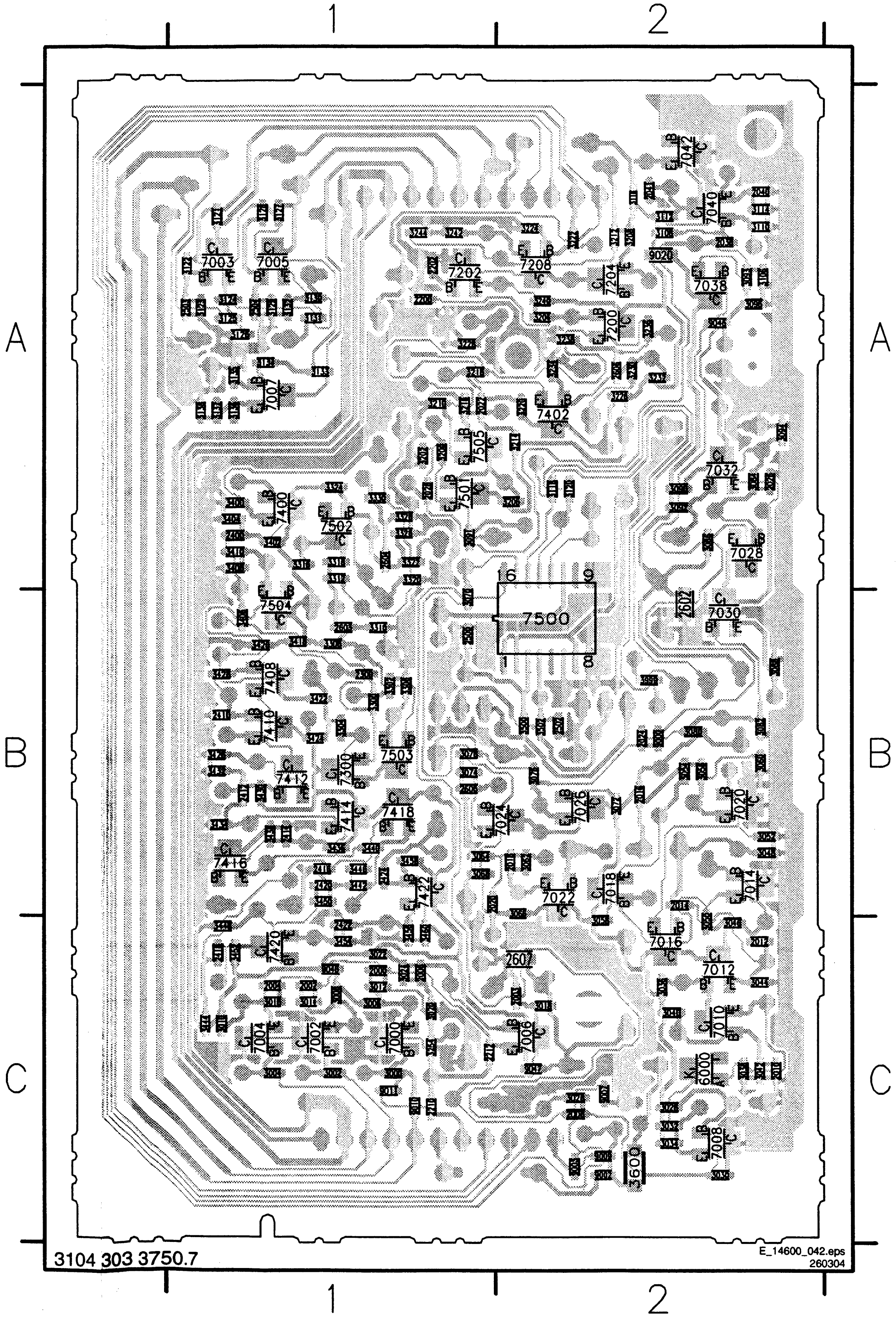
3404	A1
3406	B1
3408	A1
3410	A1
3418	B1
3420	B1
3422	B1
3424	B1
3426	B1
3428	B1
3430	B1
3432	B1
3434	B1
3436	B1
3438	B1
3440	B1
3442	B1
3444	C1
3446	B1
3448	C1
3450	B1
3452	C1
3454	C1
3456	C1
3458	B1
3460	C1
3500	B2
3502	B2
3600	C2
3999	B2
6000	C2
7000	C1
7002	C1
7003	A1
7004	C1
7005	A1
7006	C2
7007	A1
7008	C2
7010	C2
7012	C2
7014	B2
7016	C2
7018	B2
7020	B2
7022	C2
7024	B1
7026	B2
7028	A2
7030	B2
7032	A2
7038	A2
7040	A2
7042	A2
7200	A2
7202	A2
7204	A2
7208	A2
7300	B1
7400	A1
7402	A2
7408	B1
7410	B1
7412	B1
7414	B1
7416	B1
7418	B1
7420	C1
7422	B1
7500	A2
7501	A1
7502	A1
7503	B1
7504	A1
7505	A1
9000	B2
9002	C2
9003	C2
9007	C2
9009	C2
9010	C1
9011	C1
9020	A2
9045	A2
9046	C1
9047	C2


1
2
A
B
C
7500
16
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1
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7003
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7040
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7402
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7020
7018
7022
7014
7016
7012
7010
7004
7002
7000
7006
7008
6000
2602
2607
3600
9020
3104 303 3750.7
E_14600_042.eps
260304

8. Alignments

Index of this chapter

1. General alignment conditions
2. Hardware alignments
3. Software alignments
4. Option settings

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 230 V_ac / 50 Hz (± 10 %).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 20 to 30 minutes.
- Measure the voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
  Caution: never use the cooling fins/plates as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform the alignments.

Perform all electrical adjustments with the following start settings (for all CRTs):

- Set LIGHT SENSOR "off", by setting ACTIVE CONTROL to "off" with the remote control.
- Set CONTRAST to "75", BRIGHTNESS to "42" and COLOUR to "54" (via PICTURE menu).
- Set COLOUR ENHANCEMENT to "off" (via PICTURE menu).
- Set DIGITAL OPTIONS to "Pixel Plus" (via PICTURE menu), unless otherwise stated (for sets without "Pixel Plus" (= Eagle), set to "Natural Motion").
- Set DYNAMIC CONTRAST to "off" (via PICTURE menu).
- Set CATHODE DRIVE at "15" (via SAM - Alignments - General - Drive - Cathode).

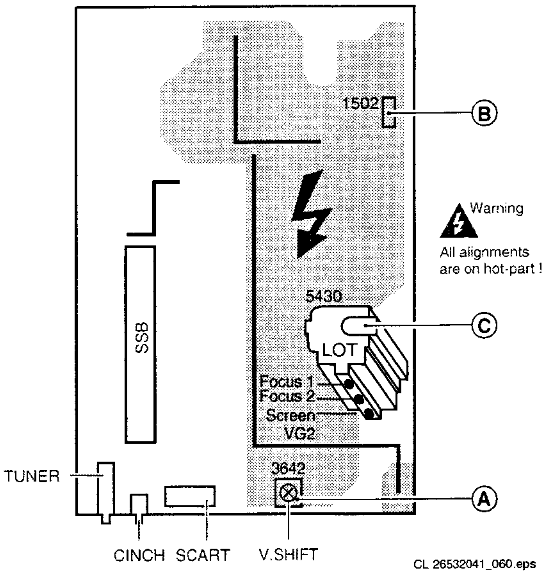
8.1.2 Adjustment Sequence

Use the following adjustment sequence:

1. Set the correct TV-set "options" (after storing, restart the set!).
2. Rough adjustment of "Vg2".
3. Rough adjustment of "Focus".
4. Rough adjustment of "Geometry".
5. Allow the set to warm up.
6. Accurate adjustment of "Vg2" and "Focus".
7. Accurate adjustment of "Geometry".
8. Software alignments (cut-off, cathode drive, peak white, white drive, etc).

8.2 Hardware Alignments

Note: The Service Alignment Mode (SAM) is described in chapter 5 of the Service Manual. Menu navigation is done with the "CURSOR UP, DOWN, LEFT or RIGHT" keys of the remote control (RC) transmitter.



CL 26532041_060.eps
110402

Figure 8-1 Top-view LSP

8.2.1 Vg2 Adjustment

In the frame-blanking period of the R, G, and B signals applied to the CRT, the "HOP" video processor inserts a measuring pulse with different DC levels. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT.

1. Go, via the MENU key, to the normal user menu, select "PICTURE", and set "CONTRAST" and "BRIGHTNESS" to "0".
2. Activate the SAM.
3. Connect the RF output of a pattern generator to the antenna input. Test pattern is a "black" picture (blank screen on CRT without any OSD info).
4. Set the channel of the oscilloscope to 20 V/div and the time base to 20 us/div. Use external triggering on the vertical pulse
   (**caution**: use a trigger point at the "**cold**" side!).
5. Ground the scope at the CRT panel ("**cold**" side) and connect a 10:1 probe to one of the cathodes of the picture tube socket (see diagram F).
6. Measure the cut-off pulse during first full line after the frame blanking. You will see two pulses, one being the cut-off pulse and the other being the white drive pulse. Choose the one with the lowest value; this is the cut-off pulse.
7. Select the cathode with the highest V_dc value for the alignment. Adjust the V_CUTOFF of this gun with the SCREEN (lower) potentiometer on the LOT to the correct DC-value, tolerance is +/- 3 V_dc (align the Vg2 potmeter first till the flyback lines are just visible and then slowly turn back until they are gone).
   - 28 inch (16:9):
     - Philips (LPD): 160 V.
   - 29 inch (4:3):
     - Philips (LPD): 160 V.
     - Samsung: 160 V.
   - 32 inch (16:9):
     - Philips (LPD): 160 V.

    - Panasonic (MEC): 170 V.
  - 36 inch (16:9):
    - Philips (LPD): 160 V.
    - Panasonic (MEC): 170 V.

8. Restore "CONTRAST" to "75" and "BRIGHTNESS" to "42".

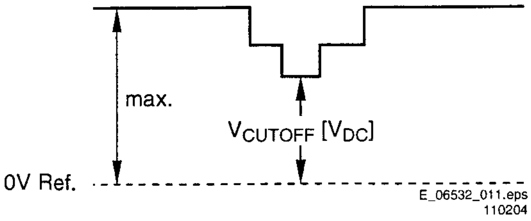


Figure 8-2 Waveform Vg2 alignment

8.2.2 Focus alignment

Notes:

- Tune the set to a "circle with crosshatch" test pattern (use an external video pattern generator).
- Choose picture mode "NATURAL" with the "SMART PICTURE" button on the remote control transmitter.
- **ELDOR** LOT outline:
  - Focus 1 (F1) = Static alignment (black wire).
  - Focus 2 (F2) = Dynamic alignment (red wire).

Focus method for Philips 32 inch tube with bleeder gun
You can recognize a CRT with bleeder gun by its type number. Example:

- W76ERF**052**X044= with bleeder gun
- W76ERF**042**X044= with standard gun.

You can also recognize it by the **ceramic** rectangular plate (this is the bleeder resistance) you will see inside the gun (viewed from above).

1. Start the alignment with the STATIC focus (upper potmeter) turned to the **left** and the DYNAMIC focus (middle potmeter) to the **right**.
2. Adjust the DYNAMIC focus until the horizontal lines at the centre of the screen have minimum width, without introducing a visible haze.
3. Adjust the STATIC focus until the vertical lines at the sides of the screen have minimum width, without introducing a visible haze.
4. Adjust the DYNAMIC focus until the horizontal lines at the centre of the screen have minimum width, without introducing a visible haze.
5. Check overall spot performance and repeat steps 3 and 4 to achieve the best result.

Focus method for all other tubes

1. Start with the STATIC and DYNAMIC focus potentiometers on the LOT at **midway**.
2. Adjust the STATIC focus until the vertical lines at the sides of the screen have minimum width, without introducing a visible haze.
3. Adjust the DYNAMIC focus until the horizontal lines at the centre of the screen have minimum width, without introducing a visible haze.
4. Check overall spot performance and repeat steps 2 and 3 to achieve the best result: a compromise between minimal visible haze at the middle of the screen and sharp lines at the edges of the screen.

8.3 Software Alignments

8.3.1 Introduction

With the software alignments, it is possible to align the Geometry, White Tone, and Tuner IF settings.
Put the set in the SAM (see chapter 5). The SAM menu will now appear on the screen. Select, via **ALIGNMENTS**, one of the sub-menus. They are explained below in the sequence of the sub-menus.

Notes:

- All changes to menu items and alignments are stored automatically, except the option codes. They must be stored manually.
- If the OPTION CODES have been changed **and stored,** the set has to be switched "OFF" and "ON" using the mains switch to activate the new settings (when switching via Standby, the option code settings are NOT read by the microprocessor).
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default values.

8.3.2 GENERAL

VG2 TEST PATTERN
In this sub-menu, you can turn "On" the OSD feedback for the Vg2 alignment (see chapter 8.2.1).

ADJUST PEAK WHITE LIMITER
Fixed setting: "9".

EHT COMPENSATION
Enter value "9" for the 28, 29 and 32 inch picture tubes
Enter value "10" for the 36 inch picture tubes.

SOFT CLIPPER
Fixed setting: "Pwl + 0%"

LUMA GAIN
Fixed setting is "1".

IF AFC
Supply, via an external video generator (e.g. PM5518), a TV signal with strength of at least 1 mV and a frequency of 475.25 MHz. Use system BG if possible, otherwise match the system of your generator with the received signal in the set.

Alignment procedure:

1. Go to the user "Installation" menu.
2. Select "Manual Installation".
3. Tune the TV-set to the system and frequency described above via "Search" - "475" - "OK".
4. If the frequency, showed in the line "Fine tune", is between 475.18 MHz and 475.31 MHz, you **do not** need to re-adjust the "IF AFC".
5. If not, adjust the frequency in the "Fine tune" line to 475.25 MHz and "Store" the program (this is **very important** because this will disable the AFC algorithm).
6. Now go to the SAM and select ALIGNMENTS - GENERAL - IF AFC.
7. During the IF AFC parameter adjustment, one can see OSD feedback in the top of the screen.
8. This OSD feedback can give 4 kind of messages:

Table 8-1 OSD feedback of AFC alignment

AFC-window	AFC-frequency vs. reference
Out	High
In	High
In	Low
Out	Low

1. The first item (IN or OUT) informs you whether you are in or out the AFC-window.
2. The second item (HIGH or LOW) informs you about whether the AFC-frequency is too high or too low.
3. First, you must align the IF AFC parameter such that you come into the AFC-window (= IN).
4. Then you must look for the point where the IF AFC parameter changes from HIGH to LOW. This level is the value you are looking for.
5. After adjustment, STORE the value.
6. Now return to the user "Installation" menu.
7. Select "Manual Installation" - "Search" - "475" - "OK" and "Store". This will set the AFC "ON" again.

Service tip: If you do not trust the frequency accuracy of your service generator, connect it to a "good" TV set and check it with the "Fine tune"-line.

IF LPRIME AFC

Use the same procedure as for the IF AFC alignment, but set the video generator to SECAM L/L' (only necessary for countries that have or can receive this system).

TUNER AGC

1. Set the external pattern generator to a colour bar video signal and connect the RF output to the aerial input. Set the amplitude to 10 mV and set the frequency to 475.25 MHz.
2. Connect a DC multimeter between pin 1 and the shielding of the Tuner (item 1200 on the LSP).
3. Adjust the TUNER AGC value (default value is 25) with the LEFT/RIGHT cursor keys until the voltage at pin 1 of the tuner lies between 3.8 and 2.3 V.
4. STORE the alignment.

TUNER AGC TUNER 2 (only for sets with DW/PIP)

Use the same procedure as described above (under TUNER AGC) with the set switched to the DW source. Measure on pin 1 of the DW Tuner (this is only applicable for sets with 2-tuner DW execution).

BLEND INTENSITY

Use this alignment when you replace the microcontroller or the HOP. It aligns the level of transparency of the menu-picture blended into the main-picture.
Position the "BRIGHTNESS", "CONTRAST", and "COLOUR" setting in the middle position (via the user PICTURE menu).

1. Apply a signal with a 100 % white video-pattern.
2. Connect an oscilloscope to pin 8 of connector 1298 of the CRT panel and measure the Red output level.
3. Align the BLEND INTENSITY parameter such, that the blended signal is 65 % of the black-white amplitude. In practice, this is about 1.3 V (blended signal) versus 2 V (full white signal).
4. The parameter can be adjusted in between "0" and "31".

8.3.3 DRIVE (Colour Alignments)

Note: Switch off all (available) colour-influencing features (e.g. set the TV in ECO-mode).

Method 1 (with colour analyser):

1. Set, via the user menu, the "Contrast" to "100".
2. In SAM, select TEST PATTERN and turn it ON. During the following alignments, you will see a white block in the middle of the screen. Measure with the colour analyser on this area.
3. Set, via the user menu, the "Brightness" to a value between 3.0 and 5.0 Nit (rough setting).
4. Select CATHODE and enter the value "15" (for all picture tubes).
5. Set the RED, GREEN and BLUE default values to "32".
6. RED BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
7. GREEN BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
8. Select a COLOR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
9. Adjust the white level via RED, GREEN, and BLUE, according to the values in table "White levels".

Table 8-2 White levels

Colour Temp.(K)	Cool (18300)	Normal (13100)	Warm (6500)
X	256	264	314
Y	264	279	324

Method 2 (without colour analyser):

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production (statistics).

1. Set, via the user menu, the "Contrast" to "100".
2. Select CATHODE and enter the value "15" (for all picture tubes).
3. RED BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
4. GREEN BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
5. Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
6. Set the RED, GREEN and BLUE default values according to the values in the "Tint settings" table.

Table 8-3 Tint settings

	Δ Cool	Normal	Δ Warm
R	0	37	+ 12
G	0	30	0
B	+ 5	31	- 14

8.3.4 LUM. DEL. (Luminance Delay)

With this alignment, you place the luminance information exactly on the chrominance information (brightness is pushed onto the colour). Use a colour bar/grey scale pattern as test signal.

- **LUM. DELAY PAL BG:** Apply a PAL BG colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value = "8".
- **LUM. DELAY PAL I:** Apply a PAL I colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value = “10”.
- **LUM. DELAY SECAM:** Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value = “9”.
- **LUM. DELAY BYPASS:** apply a NTSC colour bar/greyscale pattern as a test signal. Adjust this value until the transients of the colour and black & white part of the test area are at the same position. Default value = “7”.

8.3.5 GEO-NOR (Normal Geometry)

Note: Use for all geometry alignments an **external** pattern generator with a geometry pattern (e.g. crosshatch).

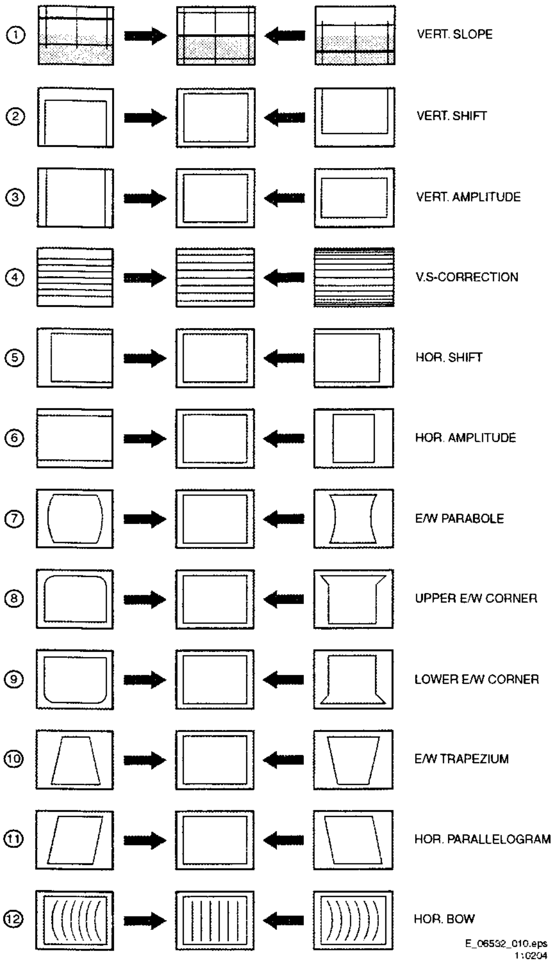


Figure 8-3 Geometry Alignments

Service tip: When the set is equipped with a rotation coil, use this menu item to check its correct alignment. If alignment is not correct, go to the INSTALLATION menu, choose SETUP, press OK, and choose PICTURE TILT. With the use of a crosshatch test pattern, align it to a correct horizontal picture.

V. SLOPE

Align the zero crossing of the frame deflection to the mechanical middle of the picture tube.

1. First, set the start conditions for 16:9 sets according to the table "Vertical S-Correction default value". Position the boundary-stripes of the test pattern on the edges of the picture tube.
2. Align V. SLOPE (during alignment, the lower half of the picture is blanked) such, that the middle line of the test pattern is matched with the edge of the pattern transient in the middle of the picture.
3. Repeat the alignment if necessary.

Table 8-4 Vertical S-Correction default value

Picture Tube	V. S-Correction default value
28" RF 16:9 Mk2	16
29" RF 4:3	32
32" RF 16:9	16
32" RF 16:9 Bleeder	16
32" RF 16:9 EMEC	27
32" RF 16:9 DOD-2	20
34" RF 4:3 Toshiba / LG.Philips	31 / 28
36" RF 16:9	20

V. SHIFT AND V. AMPLITUDE (vertical alignment)

Align the vertical centre and height of the picture.

1. Use V. AMPLITUDE to align the vertical amplitude so that the entire test pattern is visible.
2. Set V. SHIFT to value "32".
3. Connect a voltmeter (V_dc) between R3624 and "hot" ground.
4. Adjust the DC voltage to "0" with potmeter R3642 (see figure 8-1).
5. Use V. SHIFT again to align the test pattern roughly vertically in the middle.
6. Repeat the alignment if necessary.

V. S-CORRECTION

Align for equal blocks on top, middle, and bottom of the picture tube.

Align V. S-CORRECTION such that a block at the top (or bottom) of the picture has the same height as a block in the middle of the picture.

H. SHIFT AND H. AMPLITUDE (horizontal alignment)

1. Use H. AMPLITUDE to align the horizontal amplitude so that the entire test pattern is visible.
2. Use H. SHIFT to align the picture horizontally in the middle.
3. Repeat the H. AMPLITUDE alignment if necessary.

Note: In case the horizontal linearity in wide-screen mode is out of tolerance, add a "DC-shift correction" panel (3104 328 06230) to connector 1419 of the DAF-panel [diagram I]. On the DC-shift panel, cut diode **6433** for correction to the right or diode **6432** for correction to the left.

Caution: Be sure to switch "OFF" the set first. *Never* plug in a not pre-aligned module in a playing set!

EAST/WEST ALIGNMENT

1. Use EAST/WEST PARABOLA to align the vertical lines until straight.
2. Use UPPER EAST/WEST CORNER to align the vertical lines in the upper corners until straight.
3. Use LOWER EAST/WEST CORNER to align the vertical lines in the lower corners until straight.
4. Use EAST/WEST TRAPEZIUM to align for a rectangular.
5. Use HORIZONTAL BOW to correct the E/W parabola such, that it becomes symmetrical.
6. Use HORIZONTAL PARALLELOGRAM to align for straight vertical lines if necessary.

Repeat steps 1 to 6 if necessary.

8.3.6 GEO-4:3 (4:3 geometry alignment in 16:9 sets)

1. Use EAST/WEST PARABOLA to align the vertical lines until straight.
2. Use UPPER EAST/WEST CORNER to align the vertical lines in the upper corners until straight.
3. Use LOWER EAST/WEST CORNER to align the vertical lines in the lower corners until straight.

8.3.7 GEO-SW (Super Wide geometry alignment in 16:9 sets)

You only need to set the following values (if the normal geometry alignment has been performed correctly):

1. V. S-CORRECTION: enter value of the NORMAL GEOMETRY alignment.
2. H. AMPLITUDE: enter value of the NORMAL GEOMETRY alignment subtracted by "1".
3. EAST/WEST PARABOLA: enter value of the NORMAL GEOMETRY alignment.

8.3.8 GEO-100HZ (Digital Scan geometry alignment)

As all alignments are done in Pixel Plus mode (at 75 Hz), the 100 Hz mode needs an extra alignment:

- Select GEO-100HZ. The set automatically switches to 100 Hz mode.
- V. SLOPE: match the middle line of the test pattern with the upper edge of this blanking picture.
- After the alignment, return to the previous menu. The set automatically returns to "Pixel Plus" mode.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

- You can set the "hardware related" options via the SAM - ALIGNMENTS - OPTIONS or OPTION NUMBERS menu.
- You can set the "software related" options via the SAM - DEALER OPTIONS menu.

Notes:

- After changing the option(s), save them with the STORE command.
- The new option setting is only active after the TV is switched "off" and "on" again with the AC power switch (the EAROM is then read again).

8.4.2 DEALER OPTIONS

Select this sub-menu to set the initialisation codes (= options) of the set via text menu's.

Table 8-5 Dealer options overview

Menu name	Subjects	Options	Physically in set
Personal Options	Picture Mute	Yes	Picture mute active in case no picture detected
		No	Noise in case of no picture detected
	Virgin Mode	Yes	TV starts up once with language selection menu after mains switch on for the first time (virgin mode)
		No	TV does not starts up once with language selection menu after mains switch on for the first time (virgin mode)
	Auto Store Mode	None	Autostore mode disabled (not in installation menu)
		PDC-VPS	Autostore mode via ATS (PDC/VPS) enabled
		TXT page	Autostore mode via ACI enabled
		PDC-VPS-TXT	Autostore mode via ACI or ATS enabled
	TXT Preference	TOP	Preference to TOP Teletext
		FLOF	Preference to FLOF Teletext

.4.3 SERVICE OPTIONS

Select this sub-menu to set the initialisation codes (= options) of the set via text menu's.

Table 8-6 Option overview

Menu-item	Subjects	Options	Description
Dual screen	PIP/Dual Screen	Yes	Feature present.
		No	Feature not present.
	Text/EPG	Yes	Feature present.
		No	Feature not present.
	DS/PIP Tuner	Yes	Only selectable if Dual Screen option is "on"
		No	Feature not present.
Teletext	Flash RAM	Yes	Feature present.
		No	Feature not present.
	NexTView	None	Feature not present.
		Textguide only	Feature present, but only as text guide.
		Nextview 2c3	Feature present, for countries that support this.
Picture Tube	CRT Type	4 by 3	4:3 picture tube.
		16 by 9	16:9 picture tube.
	Picture Rotation	Yes	Frame rotation circuitry present.
		No	Frame rotation circuitry not present .
	CRT size	28 / 32 / 36 29 / 34 / 38	CRT size (in inches).MEC= Panasonic, II= Mark 2
	Anti MoirE filter	Yes	Feature present.
		No	Feature not present.
Video repro	Featurebox type	1050i/1250i	HD input
		Eagle 1B	Eagle present (Pixel Plus).
		Eagle 1C	Eagle present (Pixel Plus 2).
	Lightsensor	Yes	Feature present.
		No	Feature not present.
	3D Combfilter	Yes	Feature present.
		No	Feature not present.
	Picture improvement	Yes	LTP (TOPIC) present.
		No	LTP (TOPIC) not present.
	Auto Scavem	Yes	Feature present.
		No	Feature not present.
	Signalling bits	Yes	For 16:9 sets
		No	For 4:3 sets
	Impr. Noise Red.	Yes	Columbus present
		No	Columbus not present
	Pixel Plus version	1	Sets without Columbus but with Eagle (1B)
		2	Sets with Columbus and Eagle (1C)
Source Selection	AV3 2fH	Yes	Not selectable yet
		No	Feature not present.
	AV4 2fH	Yes	Not selectable yet
		No	Feature not present.
	EXT4 1fH	Yes	Not selectable yet
		No	Feature not present.
	EXT3 1fH	Yes	Feature present.
		No	Feature not present.
Audio Repro	Dolby	None	Set without Dolby
		Pro Logic	Set with Dolby ProLogic
		Virtual	Sets with Virtual Dolby
	Rear speakers	Speakerless	Virtual Dolby (without rear speakers)
		Cordless	Wireless active surroundbox present
	Subwoofer present	Yes	Feature present
		No	Feature not present
	Acoustic system	None, FL9-DAS, FL11, FL12, PV02, FL13, Soft Designline, Tech Designline.	Indicates the cabinet styling
	AVL	On	Automatic Volume Limiter 'on'
		Off	Automatic Volume Limiter 'off'

Menu-item	Subjects	Options	Description
Miscellaneous	Home Cinema	Yes	Set with Home Cinema Link (EU only)
		No	Set without Home Cinema Link
	Integrated RC	Yes	Feature present.
		No	Feature not present.
	Tuner type	UV1316	Set with Philips tuner.
		TEDE9	Set with Alps tuner.
	Integrated Radio	Yes	Feature present.
		No	Feature not present.
	P50 DVD menu line	Yes	Feature present (only in sets with Home Cinema).
		No	Feature not present.
Option no.	Group 1		Group 1 option code overview (see CRT sticker).
	Group 2		Group 2 option code overview (see CRT sticker).

8.4.4 OPT. NO. (Option numbers)

Select this sub menu to set all options at once (expressed in two long strings of numbers).

An option number (or option byte) represents a number of different options. When you change these numbers directly, you can set all options very fast. All options are controlled via eight option numbers.
When the EAROM is replaced, all options will require a re-setting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on a CRT sticker inside the TV set.

Example: The CRT sticker in the 28PW9502/12 gives the following option numbers (**Note:** this is just an example):
12660 16672 49984 00000
04118 00001 00032 18250
The first line (group 1) indicates options 1 to 4, the second line (group 2) options 5 to 8 (see tables below).
Every 5-digit number represents 16 bits (so maximum number can be 65536 if all options are set).
When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter

1. Introduction
2. Block Diagram
3. Feature Box
4. PICNIC
5. Columbus
6. FEM
7. Eagle
8. Proximity Sensor
9. Abbreviation List
10. IC Data Sheets

Note:

- Only **new** circuits, compared to its predecessor the EM5.1E, are described. For the other circuit descriptions, see the EM5.1E manual (available under order code 3122 785 13420).
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

This chassis contains the following new features/components:

- FEM (Falconic Embedded Memories): is a new Falconic with internal Field memories and jagged line removal.
- Improved 2D/3D Comb filter: The new key components are Columbus and SDRAM. When SDRAM is used, a 3D comb filter (or temporal comb filtering) is possible. Without SDRAM, only 2D comb filtering, (or spatial comb filtering) is possible. This is improved with respect to the previous 2D comb filter.
- Improved noise reduction: This is a second function of the Columbus and SDRAM. Noise reduction is possible without SDRAM (2D) and with SDRAM (3D).
- Pixel Plus 2: Eagle 1B is replaced by Eagle 1C.
  - Algorithms for Horizontal LTI and Vertical LTI are improved.
  - Thin Line Control as part of the sharpness control.
  - Face Depending Peaking should allow less sharpness in faces different from the rest of the picture. This could be used to anti age faces versus the rest of the picture.
  - Vivid Colours 1 will result in more saturated colours.
  - The range/amount of Blue Stretch is extended.
  - More steps of Green Enhancement.
  - Improved Colour Dependent Sharpness.
  - Increased range of skin gain and skin tone.

The chassis consists of a full sized LSP/SSP combination and a smaller double sided four layer SSB, which is mounted on the SSP using a 80-fold SIMM connector. The main functionalities are:

- LSP: supply, deflection, and sound amplification.
- SSP: tuner input, SIMM interface, I/O, and interface provisions for extended functions such as PIP.
- SSB: core TV functionalities, being TXT/control, video and audio decoding, feature box, video featuring, and sync/ geometry control.

The LSP (single sided) is built up very conventional, with hardly any surface mounted components on the copper side. Similar with the EM3 (but different as with the MG-chassis), the EM5 LSP has a very large "hot" part, including both deflection coils.

The SSB is a high tech module (four layer, 2 sides reflow technology, full SMC) with very high component density and complete shielding for EMC-reasons. Despite this, it is designed in such a way, that repair on component level is possible. To achieve this, attention was paid to:

- The position of service test lands: most of them are at the Tuner side.
- Accessibility (Tuner side). If there are still problems with the accessibility, one can order an extension board (see parts list).
- Clearance around surface mounted ICs (for replacing).
- Detailed diagnostics and fault finding is possible via ComPair.

The availability of Double Window (DW) or Picture In Picture (PIP) depends on the model range. There are two different executions, depending on the number of tuners:

- One Tuner: The TV has only one tuner (on the LSP), so the PIP-picture can be either from this tuner or from an external AV-source.
- Two Tuners: In this case there are two separate tuners, so the main picture and the DW picture are independently selectable. The IF signal from the main tuner is processed on the SSB, while the IF signal from the second tuner is processed by a second BOCMA video processor on the DW-panel. The source selection is done via an I/O expander.

9.2 Block Diagram

For the block diagram see chapter 6 "Wiring Diagram, Block Diagrams, and Overviews".

The Tuner (item 1200) is a PLL tuner and delivers the IF-signal, via audio & video SAW-filters, to the HIP (High-end Input Processor). The HIP has the following functions:

- IF modulation.
- Video source- and record select.
- Colour decoder.
- Synchronisation.

Three SCART-connectors are available:

- SCART1 is fully equipped,
- SCART2 is meant for VCR. Pin 10 is used for Easylink (P50) and there is a possibility for Y/C in. The CVBS-out on pin 19 is meant for WYSIWYR (What You See Is What You Record).
- SCART3 is a RGB/CVBS and audio L/R input. It can be used as second tuner input, in case of a 1-Tuner DW/PIP set.

After the HIP, we come to the part that is called the Feature box (diagram B3x):

- For Digital Scan, the PICNIC is required.
- For Natural Motion, the FALCONIC (or FEM) is required.
- For Pixel Plus, the EAGLE is required.

The HIP delivers YUV and sync signals to the PICNIC. This IC takes care of:

- Analogue to Digital conversion and vice versa.
- 50 to 100 Hz conversion.
- Panorama mode.
- Noise reduction (or via Columbus when present).
- Dynamic contrast.

Attached to the PICNIC is the Columbus chip. This 2D/3D Comb filter is used to separate chroma and luminance components out of a CVBS signal. Second function is noise reduction. It replaces the Comb filter that was attached to the HIP in the former chassis.

After the PICNIC, the (now 2fH) YUV-signals are fed to the FALCONIC (or FEM) for "Natural Motion" followed by the Eagle for "Pixel Plus" enhancement. The processed YUV signals (from Eagle or PICNIC) are, together with the sync-signals from the PICNIC, then fed to the HOP (High-end Output Processor). This IC handles the video control and geometry part. The RGB-signals for TXT/OSD (from the microprocessor) are also inserted via the HOP. The video part delivers the RGB signals to the CRT-panel and the geometry part delivers the H-drive, V-drive, and a drive-signal for rotation.

Both deflection circuits are "hot" and located on the LSP. They are driven by the HOP. To make a galvanic separation, the Line Drive is driven via transformer 5410 and the Frame Drive via transformer 5621.The horizontal output stage generates some supply voltages and the EHT-, focus- and Vg2-voltages.

The RGB amplifiers on the CRT-panel are supplied with 200 V from the LOT.
The Scavem circuit modulates transitions of the Luminance (Y) signal on the horizontal deflection current, giving a sharper picture.

The sound part is built around the MSP34xx (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Dolby decoding is also done by the MSP. Amplification is done via a "class D" integrated power amplifier IC, the TDA7490.

The microprocessor, called OTC (OSD, Teletext and Control) takes care of the analogue TXT input- and output processing. The OTC, ROM, and RAM are supplied with 3.3 V, which is derived from the +5V2.
The NVM (Non Volatile Memory) is used to store the settings, one Flash-RAM contains the set software, the other Flash-RAM (7012) is for EPG, and the DRAM is used for storing the Teletext pages.

There is a separate Standby Supply, in order to reduce the Standby power consumption. During Standby, the Main Supply is switched "off" (via TS7529).
A relay (1550) is used to switch the degaussing circuit. It is switched "on" after set start-up and switched "off" by the uP after 12 s.
The Main Supply, an SMPS based on the "down-converter" principle, generates the 141 V (V_BAT) and the +/- 16 V for the audio part.
Note: Voltage V_BAT is not mains isolated ("hot"), but is alignment free.

9.3 Feature Box

The key components of the FBX are the following ICs:
1. PICNIC.
2. Columbus.
3. FEM.
4. Eagle.

9.4 PICNIC

All FBX versions have the PICNIC as basic IC. All functions located in the PICNIC are therefore basic functions, and will be described briefly. These functions are completely controlled by the built-in microprocessor.

- **Clamp.** In the PICNIC, three analogue clamp circuits are integrated that assure a well defined DC level for the luminance (Y) and colour-difference (U, V) input signals.
- **AGC.** The AGC in the PICNIC consists of a digital controlled analogue variable gain amplifier with a gain range of 9.3 dB, and an algorithm that uses input derived from histogram data and the overflow detection. It is designed to assure an optimal ADC input range, for all input signals, and so having minimal quantisation noise.
- **Analogue pre and post filters.** The pre filters of the Feature Box are always the integrated filters of the PICNIC. The internal post filters of the PICNIC are never used.
- **ADC/DAC.** Analogue to Digital conversion is done with three identical 9-bit ADCs, and the Digital to Analogue conversion uses three identical 10-bit DACs. The Y signal is mapped on 9 bits for black-to-white range and has room for over- and undershoots by means of the 10th bit at the output DACs. The U and V channels are processed in 9-bit accuracy up to the CTI circuit that has a gain of 2, resulting in a 10-bit output that suits the 10 bit DACs.
- **Time Base Correction.** The Time Base Correction circuit simulates a fast acquisition line locked clock, while the actual system clock is locked to the input line frequency with a very large time constant. In this way the typical VCR problems linked to a one clock Feature Box can be solved, particularly the deflection circuit (in case of CRT) driven by the Feature Box can profit from this feature.
- **VCR detection.** The VCR detection of the PICNIC is an algorithm that detects the phase jumps (which occurs for instance with VCRs) to be able to correct the picture deviations. This detection is done by monitoring the PLL circuit in the PICNIC by the on-board microprocessor on several parameters.
- **Peaking.** The two dimensional peaking can boost or attenuate higher frequencies in both vertical and horizontal direction. The lowest setting is a 2D low pass. The higher settings make sharpening, but the resulting overshoots can clip relatively fast compared to the dynamic peaking, because there is no room for overshoot above white and under black. This peaking is done on field base.
- **Digital Noise Reduction (DNR).** The PICNIC accommodates three noise reduction circuits:
  - **Clinic.** This "clamp noise reduction" circuit consists of an adaptive temporal field recursive filter. It corrects the DC level of each line, when it is varying from field to field in the line segments with likely the least movement. It can be used to correct clamp errors that cannot be restored by conventional clamp circuits. The filter is completely autonomous for the user, who can only switch it "on" or "off".
  - **Limeric** (this part is not used in case of Columbus). This spatial noise reduction circuit is targeted for reduction of the mid frequency noise spectrum, where adaptive filtering combines pixels around the centre pixel and pixels from the lines above in a recursive way. The quantity of noise reduction is user defined.
  - **2D Coring.** This circuit attacks spatial noise in a very drastic way without distinguishing noise from wanted resolution. It shaves away small details of any kind, depending on the amplitude of the detail and the user setting. So, it is advised to use this feature only at the lowest settings.
- **Histogram Modification.** Using histogram modification techniques in PICNIC, the contrast of the overall picture may be improved. From a TV scene, the distribution of all luminance values is taken (histogram). This histogram is used to calculate an optimal transfer curve for the particular scene, which is used to process the video digitally resulting in a picture with improved contrast (called "Dynamic Contrast").
- **Auto Picture Control.** The PICNIC is prepared to make several APC functions in co-operation with the main software. This is made by giving relevant video quality data to main, and by giving several control 'handles' to main microprocessor. In this way, automatic picture quality settings depending on customer settings and video data can be made. The following items are prepared in the AutoTV:
  - **Automatic Picture Control.** This feature controls the settings for DNR, Limeric, coring, sharpness and histogram modification as a function of the noise figure and signal steepness information extracted from the PICNIC and from external information such as ambient light.
  - **Automatic Aspect Ratio Adaptation.** This AARA feature uses data from the black bar detection circuit to adapt vertical and horizontal amplitude to an aspect

ratio belonging to the display and does not show black bars. This is done by the control software. Auto Format is controlled via main software by reading out the black bar information from the FBX.

- **Field Rate Upconversion.** In order to remove large area flicker from the TV screen, the field-rate of the video is doubled by the Feature Box. A 50/60 Hz video input is converted to 100/120 Hz. The line frequency (16 kHz) is also doubled (32 kHz). When the video input contains fields A, B etc..., the conversion provides an AABB sequence scanning on the display. The actual up-conversion is done in the first Field Memory (FM1) by reading it twice at double speed, while writing once.
- **Input Phase.** The horizontal phase of the input video acquisition can be shifted to allow compensation for processing delay of other components in front of the Feature Box.
- **Miscellaneous Features.** To be sure that On Screen Display (OSD) is always readable, even when no video signal is received, the feature box can be switched to stable OSD mode. Free running but stable horizontal and vertical deflection drive signals will be generated, so that OSD information and PIP can be displayed jitter free, and thus clearly readable on the screen. Specially for tuning purposes and smooth channel switching a stable OSD mode is implemented that uses the horizontal time base correction combined with a slow PLL, and a small vertical catch window. This mode enables undisturbed reading of OSD while the set is tuning.

9.5 Columbus

9.5.1 Introduction

The Columbus is a combination of:

- A **2D/3D Comb filter** for both PAL and NTSC, and
- A **spatial/temporal noise reduction system** for both colour and luminance signals.

The Columbus 3D Comb filter uses digitalized CVBS, U, and V (or C) signals and can be used with or without an external 16 Mbit SDRAM. Without external 16Mbit SDRAM, 3D comb filtering and temporal noise reduction are not possible.

The noise reduction part of the Columbus is controlled by the FBX software using the SNERT interface (the "Limeric" noise reduction in the PICNIC is "off" in case of a Columbus application). The 2D/3D Comb filter part is controlled by the Main software using the I2C bus.

9.5.2 2D/3D Comb Filter

Introduction

The "3D Comb filter Columbus" is a combined 2D/3D Comb filter function that is part of the Columbus chip (item 7752). It is a comb filter for both PAL and NTSC.

The 3D Comb filter is used to separate chroma and luminance components out of a CVBS signal. It is of no use when the CVBS signal is a SECAM signal (SECAM signals cannot be combed) The Columbus chip can be used with or without 16 Mbit external SDRAM (item 7753). When an external SDRAM is connected to the IC, the Comb filter function can work in combined 2D/3D processing (depending on the detected pixel based motion). When no external SDRAM is connected, only 2D Comb filtering is possible.

The Columbus can comb the following standard signals:

- PAL B, PAL G, PAL H, PAL I, PAL D, PAL K: Colour standard PAL, Colour carrier at 4.43 MHz, field frequency: 50 Hz
- PAL M: Colour standard PAL, Colour carrier at 3.58 MHz, field frequency: 60 Hz
- PAL N: Colour standard PAL, Colour carrier at 3.58 MHz, field frequency: 50 Hz
- NTSC M: Colour standard NTSC, Colour carrier at 3.58 MHz, field frequency: 60 Hz

For NTSC signals, the PAL delay line must always be bypassed.

The following signals CANNOT be combed:

- Double Window signals or Multi PIP. For these signals, only one part or even no part of the signal is in relation with the burst. The part that is not in relation with the burst can become very blurred when combed by the Columbus Comb filter. Such a signal must be bypassed. Notch mode is not even an option since e.g. in double window, one part can be a PAL signal while the other part is NTSC or SECAM.
- In cases where a SECAM signal is presented to the Columbus Comb filter; both the luminance and UV path must be bypassed. The PAL delay line inside the Columbus cannot be used for SECAM signals so it must also be bypassed. The luminance path must have luminance at its input instead of CVBS. A chroma delay line outside Columbus must be used for SECAM signals. Reason for this: the Columbus PAL delay line halves the output of the chroma signals in case of SECAM.
- Y/C, YPbPr, and RGB signals do not have to be combed. So both the luminance and UV path must be bypassed. The PAL delay line will also be bypassed.
- In cases where the Columbus Comb filter does not receive a CVBS signal with burst at the right place according to the standard (this includes black and white signals without burst), phase correction results become unpredictable and the Comb filter must be set in bypass (= luminance path bypassed, UV path bypassed, PAL delay line bypassed)
- VCR signals cannot be combed and must be processed in notch mode, or bypassed.

Columbus Modes

The several modes of the Columbus 3D Comb filter are:

- Bypass mode.
- Band-Pass-Notch mode.
- 2D Comb filter modes.
  - Simple median.
  - Median.
- Field Comb filter mode.
- Frame Comb filter mode.

Bypass Mode

The 3D Comb filter can be set in bypass mode. In this mode, the CVBS, U and V signals are just bypassed to the output.

Band-Pass-Notch Mode

This is a mode where no Comb filtering is applied. A "Band Pass Filter" is used to filter the chroma information out of the CVBS signal. A "Notch Filter" is used to subtract the sub carrier out of the CVBS in order to make a luminance signal without chroma sub carrier.

In terms of cross colour and cross luminance, this mode has the worst performance of all. It is only used on these signals where no comb filtering can be applied (non-standard signals and most VCR signals for example).

2D Comb filter modes

A Comb filter does an action on a current pixel and a delayed pixel. When the delayed pixel is a line-delayed pixel, we talk about a "Spatial or 2D Comb Filter" (for NTSC the delay must be 1 line, for PAL it must be 2 lines).

Spatial or 2D Comb filters show problems on vertical colour transients and on single coloured lines. For these situations, extra hardware is added in the Columbus chip to avoid these kinds of problems. However even with these extra measures, there are still situations where the 2D Comb filter does not perform optimally (diagonal resolution and single lines with equal luminance content). In order to restrict the working area

of the 2D Comb filter to the frequencies where the sub carrier is present, a horizontal band pass filter always precedes a 2D Comb filter.
When a 2D Comb filter has no extra hardware to avoid problems at vertical colour transients (or this extra hardware is switched “off”), the Comb filter is called a “simple median filter”. When there is extra hardware to avoid these kinds of problems, the filter is called a “median filter”.

Field Comb filter mode
A Comb filter does an action on a current pixel and a delayed pixel. When the delayed pixel is a field-delayed pixel, we talk about a “Field Comb Filter”. Field Comb filters are only for PAL of commercial interest.
Field Comb filters show also problems on vertical colour transients and on motion. For the vertical transients, a hanging dots detector has been added, however the performance on vertical transients of the field Comb filter, even with this hanging dots detector, is worse than the performance of the 2D Comb filter. On motion, the field Comb filter performs very badly. A motion detector must detect the pixels where there is motion and on these pixels, the Comb filter must be forced back to 2D Comb filter mode. This switching back is not implemented with a hard switch, but with a motion controlled fader. When there is a lot of motion, the fader will take a lot of the 2D Comb filter output, when there is less motion, more field-combed signal will be taken.
A field Comb filter is also called a “vertical-temporal filter” because it filters in the vertical and temporal direction.

Frame Comb filter mode
A Comb filter does an action on a current pixel and a delayed pixel. When the delay is a frame, we talk about a “Frame Comb Filter”. For NTSC we need a delay of one frame, for PAL however the delay must be two frames.
Frame Comb filters have the best performance, but just like the Field Comb filter, they perform very badly on motion. A motion detector will have to detect motion and on these motion pixels, 2D Comb filtering will have to be applied. A frame Comb filter is a pure “temporal filter”.
The Columbus needs an external memory connected to it, before it can do a temporal or vertical-temporal Comb filter action. When no external memory is connected, field or frame Comb filtering is impossible.

Block Diagram
The signal CVBS-TXT that used to go to the “old” Comb filter (item 7307 in EM5.1E) is here re-routed via an emitter follower (7320) to the Y and C input of the HIP. The chroma demodulator in the HIP demodulates the CVBS to U and V signals. These signals are sent to the HIP output together with the CVBS signal. So, the HIP delivers CVBS (and not Y), U, and V to the PICNIC.
Note: All these signals are not combed and have no notch filter either, so there is a lot of cross color and cross luma present.

In the next block diagram, two main parts of the Columbus 2D/3D Comb filter can be seen:

- The upper part is what is called the luminance Comb filter. It tries to make an as clean as possible luminance signal out of the CVBS signal at the input.
- The lower part receives U and V signals (sequentially) that are normally only band pass filtered in front of the 3D Comb filter. It filters all left over luminance signals out of it, in order to make an as clean as possible U and V signal.

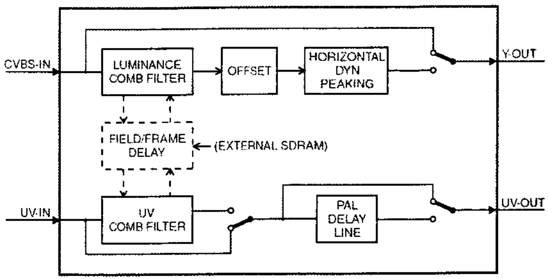


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Figure 9-1 Columbus 2D/3D Comb filter block diagram

The Comb filter has two inputs. One is the CVBS where clean luminance (Y) will be extracted from; the other one is UV where a clean U and V signal will be extracted. Both input signals are **digital** signals.

The field or frame delay is used for the Field and Frame Comb filter mode. An external memory connected to the Columbus IC provides this delay.

Phase correction is done at the inputs of both the Comb filter blocks. There is a phase correction for spatial filtering (called the spatial phase corrector) and a separate phase correction on the signals used for temporal (Frame or Field) Comb filtering (called the temporal phase corrector).

The offset block receives the motion dependant 2D/3D Comb filtered signal as input. The black level of the luminance signal is restored and the result is output. The black level restoration is corrected continuously. However, on VCR signals, this restoration can become unstable. Therefore, on VCR signals, a fixed black level restoration value must be forced.

A horizontal dynamic peaking can be done on the luminance signal. This peaking is adaptive in order not to amplify any cross luminance distortion. It detects where there could be left over sub carrier in the luminance signal and reduces the peaking over there. The detection of the left over cross luminance is different depending on the pre-filter or post-filter mode.
The amount of peaking and coring can be chosen. The peaking algorithm behind it is a simplified copy of the luminance peaking of picnic. After the peaking block, the signal is output as clean luminance.

The bypass switches have the obvious purpose of bypassing the input signal, in case no Comb filtering is wanted.

A PAL delay line is added in the UV path. This is done because a delay line in front of the 3D Comb filter does need an extra vertical filter action on the UV signals. This vertical filtering deteriorates the vertical transient performance for colours. The Columbus Comb filter cannot undo this. However, this reduction in performance can be omitted by putting the PAL delay line after the 3D Comb filter block.
For PAL signals, the PAL delay line in front of the Columbus 3D Comb filter is bypassed and the Columbus delay line is switched “on”. In cases where the delay line in front of Columbus cannot be bypassed, the Columbus PAL delay line is bypassed.
For NTSC signals, the PAL delay line is bypassed as usual.

9.5.3 Noise Reduction and Noise Estimator

The noise reduction function is a sophisticated successor of the noise reduction module from the PICNIC-chip, also known as "LIMERIC".

Besides the noise reduction part, the Columbus noise reduction module also comprises a noise estimator. This noise estimator (the LORE-noise estimator) is a new design with the ambition of more accuracy and with less control complexity than the existing noise estimators.

9.6 FEM (Falconic Embedded Memory)

The FEM IC (SAA4998) is the successor of the SAA4993H, and adds "jagged line removal" and "embedded field memories" as new/improved features.

9.6.1 Motion Estimation/Compensation

The FEM utilizes a high quality motion estimator. The motion estimation is applied to eliminate the motion blur of current 100 Hz TV sets and to eliminate the motion judder of movies. This judder is visible on all television sets and even in a cinema. Particularly for movies (with only 25 pictures/second), the increased number of pictures helps to smoothen the motion. These improvements a.o. lead to a picture performance improvement on a global scale, with an optimal quality independent from the received standard (50/60 Hz and/or video/film) or display mode (field doubling/de-interlaced 1fV). Especially film judder removal from a 60 Hz input source, the so-called 3-2 pull down film mode, makes the FEM globally applicable.

9.6.2 4:2:2 processing

The colour data path in the FEM is implemented in 4:2:2 bandwidth (as in PICNIC). The 4:2:2 mode requires an Field Memory (FM1) of 16 bits wide.

9.6.3 Upconversion

The FEM is always used in combination with the Eagle. Therefore, the output is always adapted to the input of the Eagle. This 2fV/4fH signal is motion compensated. Only 3 out of 4 fields are correct motion compensated. The Eagle will only use these three correct motion compensated fields.

9.6.4 Dynamic Noise Reduction

For signals that have been affected by noise, improvement can be achieved by combining of the pixel values of the current and past fields of video. This is however only possible for those picture areas in which no movement occurs. If movement occurs in some area, only the information from the current field of video may be displayed for that area to prevent smearing, so noise reduction is not effective there.
To reduce loss of detail, the high frequencies can be bypassed. This can be done because the human eye is more sensitive to noise with low frequencies. The movement detection is implemented in the luminance channel and in the colour channel to reduce artefacts such as smearing.

9.6.5 Vertical Peaking

The vertical peaking circuit in FEM works on de-interlaced data, resulting in a double resolution (compared to PICNIC) high vertical frequency enhancement.

9.6.6 EDDI

EDDI is an Edge Dependent De-Interlacer. This improved de-interlacer, results in smaller jagged lines for video input sources (not for film sources!).

9.6.7 Strobe

Having a FEM in the data path, it is easy to create a still picture or freeze feature. A frame can be frozen once, or, using the strobe feature, repetitively after a certain programmable interval of time. The Eagle is used to make "still pictures".

9.7 Eagle

The Eagle has the following features:

- **Vertical upscaler.** Two fully programmable vertical upscalers are implemented in the Eagle chip, one for the luminance signal, and one for the colour difference signals. However, the number of output lines is never allowed to exceed 1024 lines per field including blanking. This means that 1050i/1250i is still possible.
- **Vertical Zoom.** The vertical zooming is done with the vertical upscaler of the Eagle instead of using the FEM upscaling. Zoom factors varying from 1 to 8 can be selected. Vertical compression is possible in 1fV up to a factor of 2.
- **Interlacer and horizontal upscaler.** Two fully programmable horizontal upscalers are implemented in the Eagle chip, one for the luminance signal, and one for the colour difference signals.
- **Continuous horizontal zoom/compression.** The horizontal zooming is done with the interlacer and horizontal upscaler of the Eagle instead of the PICNIC upscaling. In the Eagle, a digital sample rate converter can provide horizontal video compression up to 50 %, and up to 8 times zoom. In compress mode, a part of the screen remains unused. In this case, parts of the display can be filled in with a grey value, a colour, or other signal source that bypasses the Feature Box (TXT or another compressed picture).
- **Panorama.** A panoramic horizontal distortion on the picture can be applied to make a screen-fitting picture, without having black side panels, or lost video. This is mainly used to fit 4:3 pictures in a 16:9 display with a resulting correct aspect ratio in the middle of the screen and stretched video at the left and right sides. The inverse feature is called "amaronap" and can also be applied.
- Sub pixel **Luminance Transient Improvement** (LTI): The Eagle contains a horizontal and a vertical sub pixel LTI.
- **Peaking**: In the Eagle both horizontal and vertical luminance peaking is implemented. The horizontal peaking equals the peaking of the PICNIC. The vertical peaking is an addition of two fixed and one 9-taps fully programmable peaking filters.
  - Horizontal luminance peaking: Peaking in Eagle can be used in two ways:
    - **a.** The first way is to give the luminance a linear boost of the higher frequency ranges, which makes no distinction between small and large details or edges.
    - **b.** The other way is to use the peaking dynamically, in order to boost smaller details and provide less gain on large details and edges. The effect is detail enhancement without creation of unnatural large over- and undershoots on large details and edges.
  - Vertical luminance peaking: There are three vertical peaking filters. Two fixed vertical peaking filter and one fully programmable vertical peaking filter. The three filters all have their separate gain setting before the results are added. To avoid excessive gain settings a high peak suppression can be set to avoid excessive output results.

- **Colour Dependent Sharpness** (CDS): The colour dependent sharpness circuit increases the luminance sharpness in saturated red and magenta parts. The reduction of the normal peaking can be switched "on/off".

The below given colour features are implemented in the Eagle:

- **Digital Colour Transient Improvement** (DCTI): DCTI equals the PICNIC DCTI implementation with improved control range. The DCTI is done with Eagle i.s.o. PICNIC.
- **Skin tone correction**: The idea of Skin tone correction is to correct UV components corresponding to skin towards an "ideal" skin tone axis.
- **Blue Stretch**: This feature makes it possible to shift colours near white towards more bluish coloured white.
- **Green Enhancement**: This feature makes it possible to shift low saturated green colours towards more saturated green colours.
- **Colour Dependent Peaking** (CDP): When using luminance peaking, the viewer has the impression that the colour performance is somewhat lower then in the picture generated without the luminance peaking circuit. This impression is normal because no action was done in the colour channel to compensate for the change in the luminance channel. Locally, at the edge position the contrast has been increased without increase of the saturation at this point. That is why the viewer perceives less colour. To give the viewer the same colour impression as on the original picture, a correction to the colour has to be done at the same place where a change was made in the luminance. This is CDP.
- **Skin Tone Dependent Peaking** (STDP): The horizontal and vertical peaking can be reduced in skin tone areas to avoid that people become too old. Attenuation can be applied to both horizontal and vertical peaking.

.8 Abbreviation list

2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeping up the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature-box
AM	Amplitude Modulation
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV
AR	Aspect Ratio: 4 by 3 or 16 by 9
Artistic	See OTC 2.5: main processor
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars but without throwing away video information
ATV	See Auto TV
AUDIO_C	Audio Centre
AUDIO_L	Audio Left
AUDIO_R	Audio Right
AUDIO_SL	Audio Surround Left
AUDIO-SR	Audio surround right
AUDIO_SW	Audio Subwoofer
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
BC-PROT	Protection signal to the uP for a too high Beam Current.
BG	System B and G
BLC-INFO	Black Current Info
B-SC1-IN	Blue SCART1 in
B-SC2-IN	Blue SCART2 in
B-TXT	Blue teletext
BOCMA	BiMOS One Chip Mid-end Architecture: integrated video and chroma decoder
CL	Constant Level: audio output to connect with an external amplifier
ComPair	Computer aided rePair
CRT	Cathode Ray Tube or picture tube
CSM	Customer Service Mode
CTI	Colour Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronisation
CVBS-TER	CVBS terrestrial
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DC-filament	Filament supply voltage
DFU	Direction For Use: description for the end user
DNR	Digital Noise Reduction: noise reduction feature of the box
DPL	Dolby ProLogic
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for dealers to enter e.g. service mode
DVD	Digital Versatile Disc
DYN-FASE-COR	Dynamic phase correction, to correct the phase of the H-drive
Eagle	Feature box IC performing peaking, zooming and sub pixel LTI in both horizontal and vertical direction, CTI and other colour features
EHT	Extra High Tension
EHT-INFO	Extra High Tension information, used for contrast reduction, vertical and horizontal amplitude correction, beam current protection, and flash detection.
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NexTView)
EW	East West, related to horizontal deflection of the set
EW-DRIVE	The drive signal for the EW-transistor
EXT	External (source), entering the set via SCART or via cinches
FALCONIC	SAA4992H, Feature Box IC performing Digital Natural Motion, 3DNR, and vertical zoom and vertical peaking
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-PIP	The fast blanking signal for PIP
FBL-TXT	The fast blanking signal for TXT. It has a higher priority than FBL-PIP
FBSCO	Fixed Beam Current Switch Off, a 140 V dip detection to activate the black switch off circuit
FBX	Feature Box: part of small signal / separate module which contains 100 Hz processing, extra featuring and AutoTV algorithms (FBX6= based on PICNIC, FBX7= based on PICNIC and Eagle)
FDS	Full Dual Screen
FILAMENT	Filament of CRT
FLASH	Flash memory
FM	Field Memory or Frequency Modulation
G-TXT	Green teletext
GND-DRIVE	A separate ground for the line drive towards the line driver
HA50	Horizontal Acquisition 1fh: horizontal sync pulse coming out of the HIP
HD100	Horizontal Drive 2fh: horizontal sync pulse coming out of the feature-box
HD at HOME	A signal from the OTC, to switch the HOP to the Pixel Plus standard (75 Hz frame)
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection
HIP	High-end video Input Processor (TDA9320): video and chroma decoder of EM5E
HOP	High-end video Output Processor (TDA9330): video, sync, and geometry controller of EM5E
HP	Headphone
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in 'pairs', causing line flicker
Last Status	The settings last chosen by the customer, read, and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LDP	Line Deflection Protection signal, derived from the EW-current and voltage
LED	Light Emitting Diode

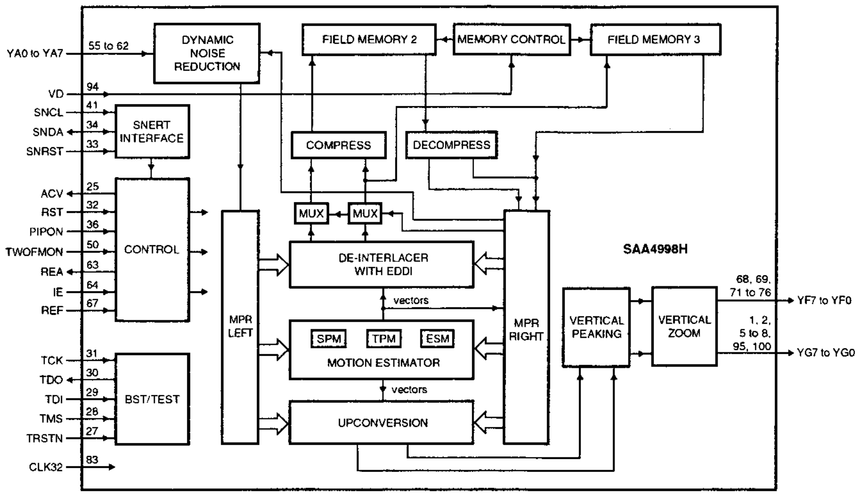
LINE DRIVE	Line drive signal (for the Line transistor)
LNA	Low Noise Adapter
LORE	LOcal REgression based noise reduction
LSP	Large signal panel
MSP	Multi-standard Sound Processor: ITT sound decoder of EM5E
MUTE	Mute-Line
NC	Not Connected
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED
OSD	On Screen Display
OTC	On screen display Teletext and Control; also named Artistic (SAA5800)
P50	Project 50 communication: protocol between TV and peripherals
PCB	Printed Circuit Board
PICNIC	Peripheral Integrated Combined Network IC (SAA4978): main IC for 100 Hz featuring and feature processing
PIP	Picture In Picture
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PTP	Picture Tube Panel
RAM	Random Access Memory
R-TXT	Red teletext
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	Reset signal
RGB-PIP	RGB-input for PIP
RGB-TXT	RGB-input for Teletext and OSD
RGB-VC	RGB-input to the Picture Tube Panel
ROM	Read Only Memory
SAM	Service Alignment Mode
SC	Sandcastle: two-level pulse derived from sync signals
S/C	Short Circuit
SCAVEM	Scan Velocity Modulation
SCL-F	Clock signal on fast I2C bus
SD	Standard Definition
SDA-F	Data signal on fast I2C bus
SIF	Sound Intermediate Frequency
SIMM	80-fold connector between LSP and SSB
SNERT	Synchronous No parity Eight bit Reception and Transmit
SSB	Small Signal Board
STBY	Standby
SW	Subwoofer
SWAN	Spatial Weighted Averaging Noise reduction
TXT	Teletext
TXT-DS	Teletext Dual Screen
TXT-KILL	To kill the TXT picture to insert a PIP. It has a higher priority than FBL-TXT.
uP	Microprocessor
U100	U from Feature Box
V100	V from Feature Box
VA50	Vertical Acquisition 1Fh
VBAT	Main supply for deflection (mostly 141 V)
VD100	Vertical Drive 2fh: vertical sync pulse from deflection
VDPOS	One of the symmetrical drive signals for the DC frame output stage.
VDNEG	One of the symmetrical drive signals for the DC frame output stage.
VDS	Virtual Dolby Surround
VFB	Vertical Flyback Pulse: vertical sync pulse coming from the Feature Box
VL	Variable Level out: processed audio output towards external amplifier
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
X-RAY-PROT	A protection signal for too high X-ray radiation
XTAL	Quartz crystal
Y100	Y from Feature Box
Y-OUT	Luminance-signal to HOP IC
YUV-Feat	The YUV input for the main picture, coming from the Feature box or the HIP

9.9 IC Data Sheets

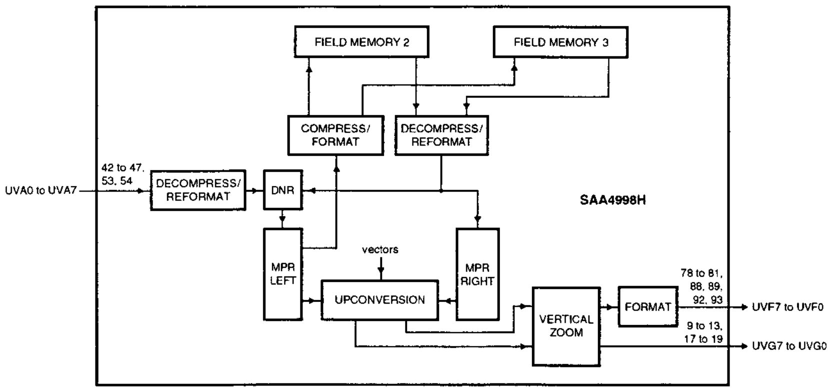
In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as a 'black box' in the electrical diagrams (with the exception of 'memory' and 'logic' ICs).

9.9.1 Diagram B3B, SAA4998 (IC7760)

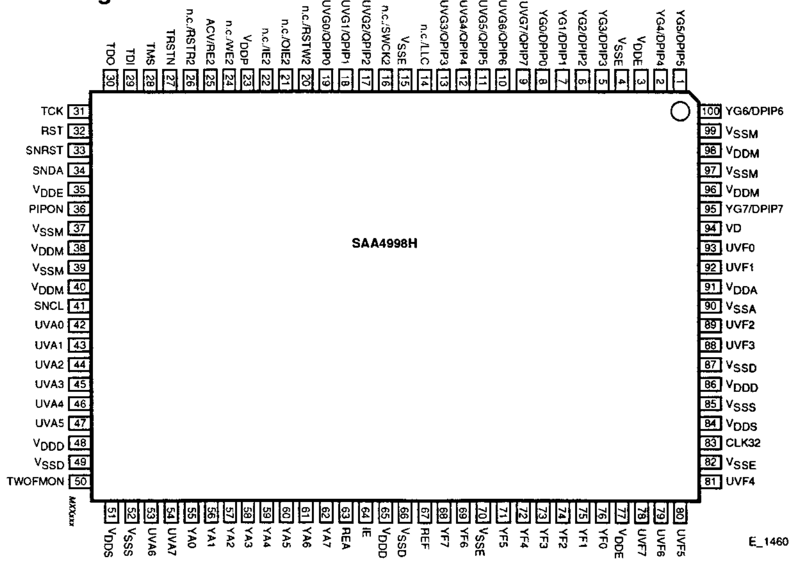
Block diagram of the luminance part in full FALCONIC mode.


YA0 to YA7
55 to 62
DYNAMIC NOISE REDUCTION
FIELD MEMORY 2
MEMORY CONTROL
FIELD MEMORY 3
VD
94
SNCL
41
SNDA
34
SNRST
33
SNERT INTERFACE
COMPRESS
DECOMPRESS
ACV
25
RST
32
PIPON
36
TWOFMON
50
REA
63
IE
64
REF
67
CONTROL
MPR LEFT
MUX
MUX
DE-INTERLACER WITH EDDI
vectors
SPM
TPM
ESM
MOTION ESTIMATOR
vectors
UPCONVERSION
MPR RIGHT
SAA4998H
VERTICAL PEAKING
VERTICAL ZOOM
68, 69, 71 to 76
YF7 to YF0
1, 2, 5 to 8, 95, 100
YG7 to YG0
TCK
31
TDO
30
TDI
29
TMS
28
TRSTN
27
BST/TEST
CLK32
83

Block diagram of the chrominance part in full FALCONIC mode.


FIELD MEMORY 2
FIELD MEMORY 3
COMPRESS/ FORMAT
DECOMPRESS/ REFORMAT
UVA0 to UVA7
42 to 47, 53, 54
DECOMPRESS/ REFORMAT
DNR
SAA4998H
MPR LEFT
vectors
MPR RIGHT
UPCONVERSION
VERTICAL ZOOM
FORMAT
78 to 81, 88, 89, 92, 93
UVF7 to UVF0
9 to 13, 17 to 19
UVG7 to UVG0

Pin configuration


TDO 30
TDI 29
TMS 28
TRSTN 27
n.c./RSTR2 26
ACV/RE2 25
n.c./WE2 24
VDDP 23
n.c./IE2 22
n.c./OIE2 21
n.c./RSTW2 20
UVG0/QPIP0 19
UVG1/QPIP1 18
UVG2/QPIP2 17
n.c./SWCK2 16
VSSE 15
n.c./LLC 14
UVG3/QPIP3 13
UVG4/QPIP4 12
UVG5/QPIP5 11
UVG6/QPIP6 10
UVG7/QPIP7 9
YG0/DPIP0 8
YG1/DPIP1 7
YG2/DPIP2 6
YG3/DPIP3 5
VSSE 4
VDDE 3
YG4/DPIP4 2
YG5/DPIP5 1
TCK 31
RST 32
SNRST 33
SNDA 34
VDDE 35
PIPON 36
VSSM 37
VDDM 38
VSSM 39
VDDM 40
SNCL 41
UVA0 42
UVA1 43
UVA2 44
UVA3 45
UVA4 46
UVA5 47
VDDD 48
VSSD 49
TWOFMON 50
SAA4998H
100 YG6/DPIP6
99 VSSM
98 VDDM
97 VSSM
96 VDDM
95 YG7/DPIP7
94 VD
93 UVF0
92 UVF1
91 VDDA
90 VSSA
89 UVF2
88 UVF3
87 VSSD
86 VDDD
85 VSSS
84 VDDS
83 CLK32
82 VSSE
81 UVF4
51 VDDS
52 VSSS
53 UVA6
54 UVA7
55 YA0
56 YA1
57 YA2
58 YA3
59 YA4
60 YA5
61 YA6
62 YA7
63 REA
64 IE
65 VDDD
66 VSSD
67 REF
68 YF7
69 YF6
70 VSSE
71 YF5
72 YF4
73 YF3
74 YF2
75 YF1
76 YF0
77 VDDE
78 UVF7
79 UVF6
80 UVF5
MXXxxx

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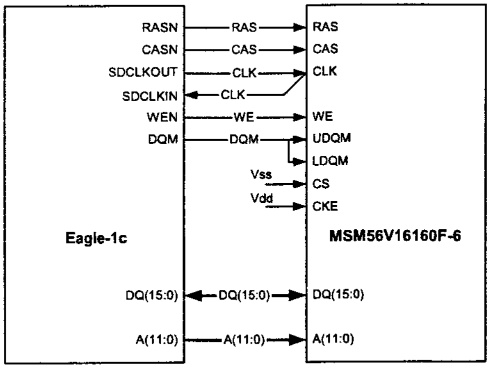
300304

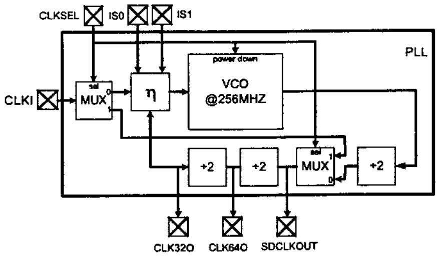
Figure 9-2 Internal Block Diagram and Pin Configuration.

9.9.2 Diagram B3C, T6TU5EF (IC7720)

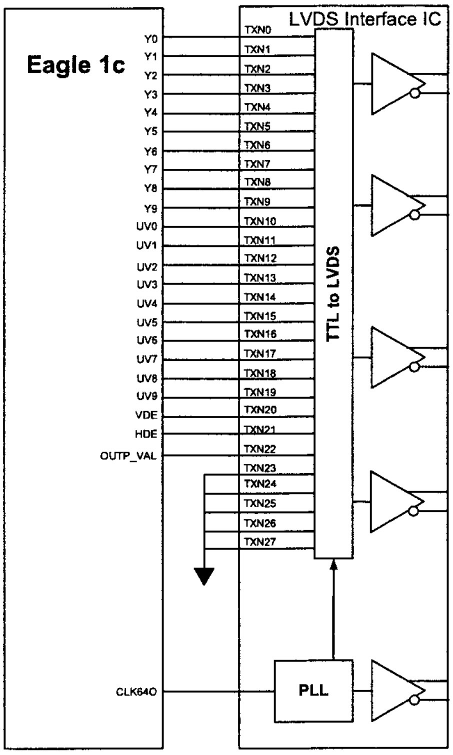
Interface between Eagle and External SDRAM

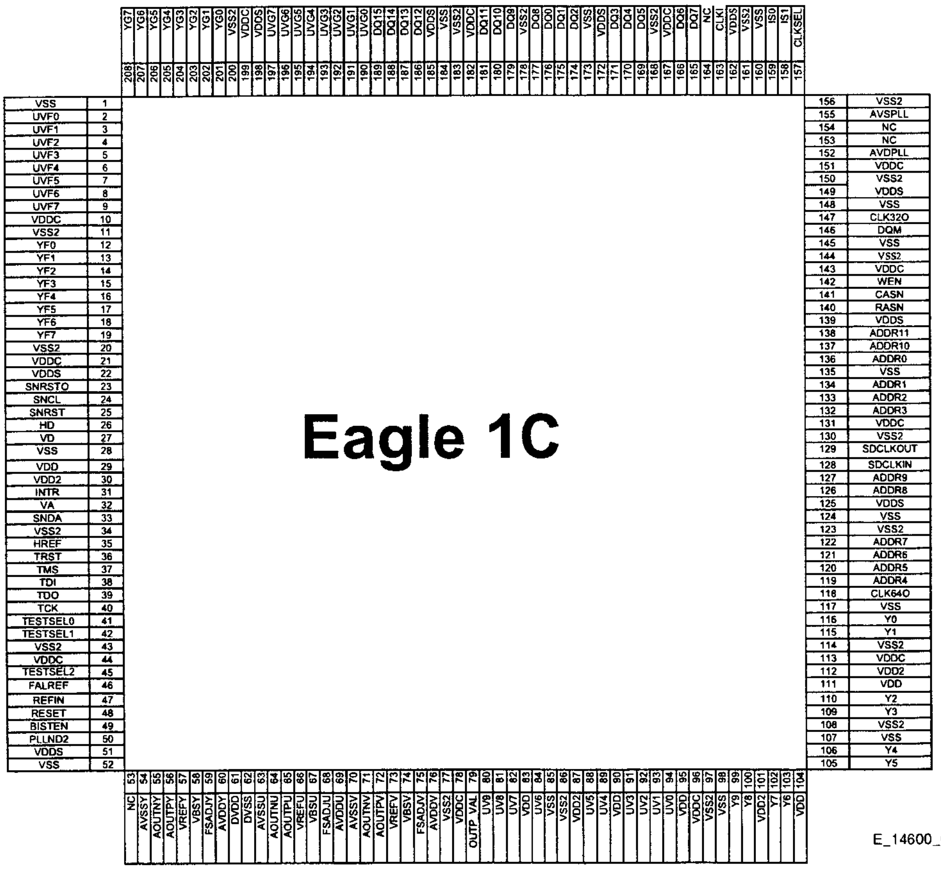

RASN
CASN
SDCLKOUT
SDCLKIN
WEN
DQM
Eagle-1c
DQ(15:0)
A(11:0)
RAS
CAS
CLK
CLK
WE
DQM
Vss
Vdd
DQ(15:0)
A(11:0)
RAS
CAS
CLK
WE
UDQM
LDQM
CS
CKE
MSM56V16160F-6
DQ(15:0)
A(11:0)

Internal Clock generation


CLKSEL
IS0
IS1
PLL
CLKI
MUX
η
power down
VCO
@256MHZ
+2
+2
MUX
+2
CLK32O
CLK64O
SDCLKOUT

EAGLE IC digital output interface to LVDS device


Eagle 1c
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Y8
Y9
UV0
UV1
UV2
UV3
UV4
UV5
UV6
UV7
UV8
UV9
VDE
HDE
OUTP_VAL
CLK64O
LVDS Interface IC
TXN0
TXN1
TXN2
TXN3
TXN4
TXN5
TXN6
TXN7
TXN8
TXN9
TXN10
TXN11
TXN12
TXN13
TXN14
TXN15
TXN16
TXN17
TXN18
TXN19
TXN20
TXN21
TXN22
TXN23
TXN24
TXN25
TXN26
TXN27
TTL to LVDS
PLL



VSS	1	53	NC	156	VSS2	208	YG7
UVF0	2	54	AVSSY	155	AVSPLL	207	YG6
UVF1	3	55	AOUTNY	154	NC	206	YG5
UVF2	4	56	AOUTPY	153	NC	205	YG4
UVF3	5	57	VREFY	152	AVDPLL	204	YG3
UVF4	6	58	VBSY	151	VDDC	203	YG2
UVF5	7	59	FSADJY	150	VSS2	202	YG1
UVF6	8	60	AVDDY	149	VDDS	201	YG0
UVF7	9	61	DVDD	148	VSS	200	VSS2
VDDC	10	62	DVSS	147	CLK32O	199	VDDC
VSS2	11	63	AVSSU	146	DQM	198	VDDS
YF0	12	64	AOUTNU	145	VSS	197	UVG7
YF1	13	65	AOUTPU	144	VSS2	196	UVG6
YF2	14	66	VREFU	143	VDDC	195	UVG5
YF3	15	67	VBSU	142	WEN	194	UVG4
YF4	16	68	FSADJU	141	CASN	193	UVG3
YF5	17	69	AVDDU	140	RASN	192	UVG2
YF6	18	70	AVSSV	139	VDDS	191	UVG1
YF7	19	71	AOUTNV	138	ADDR11	190	UVG0
VSS2	20	72	AOUTPV	137	ADDR10	189	DQ15
VDDC	21	73	VREFV	136	ADDR0	188	DQ14
VDDS	22	74	VBSV	135	VSS	187	DQ13
SNRSTO	23	75	FSADJV	134	ADDR1	186	DQ12
SNCL	24	76	AVDDV	133	ADDR2	185	VDDS
SNRST	25	77	VSS2	132	ADDR3	184	VSS
HD	26	78	VDDC	131	VDDC	183	VSS2
VD	27	79	OUTP_VAL	130	VSS2	182	VDDC
VSS	28	80	UV9	129	SDCLKOUT	181	DQ11
VDD	29	81	UV8	128	SDCLKIN	180	DQ10
VDD2	30	82	UV7	127	ADDR9	179	DQ9
INTR	31	83	VDD	126	ADDR8	178	VSS2
VA	32	84	UV6	125	VDDS	177	DQ8
SNDA	33	85	VSS	124	VSS	176	DQ0
VSS2	34	86	VSS2	123	VSS2	175	DQ1
HREF	35	87	VDD2	122	ADDR7	174	DQ2
TRST	36	88	UV5	121	ADDR6	173	VSS
TMS	37	89	UV4	120	ADDR5	172	VDDS
TDI	38	90	VDD	119	ADDR4	171	DQ3
TDO	39	91	UV3	118	CLK64O	170	DQ4
TCK	40	92	UV2	117	VSS	169	DQ5
TESTSEL0	41	93	UV1	116	Y0	168	VSS2
TESTSEL1	42	94	UV0	115	Y1	167	VDDC
VSS2	43	95	VDD	114	VSS2	166	DQ6
VDDC	44	96	VDDC	113	VDDC	165	DQ7
TESTSEL2	45	97	VSS2	112	VDD2	164	NC
FALREF	46	98	VSS	111	VDD	163	CLKI
REFIN	47	99	Y9	110	Y2	162	VDDS
RESET	48	100	Y8	109	Y3	161	VSS2
BISTEN	49	101	VDD2	108	VSS2	160	VSS
PLLND2	50	102	Y7	107	VSS	159	IS0
VDDS	51	103	Y6	106	Y4	158	IS1
VSS	52	104	VDD	105	Y5	157	CLKSEL

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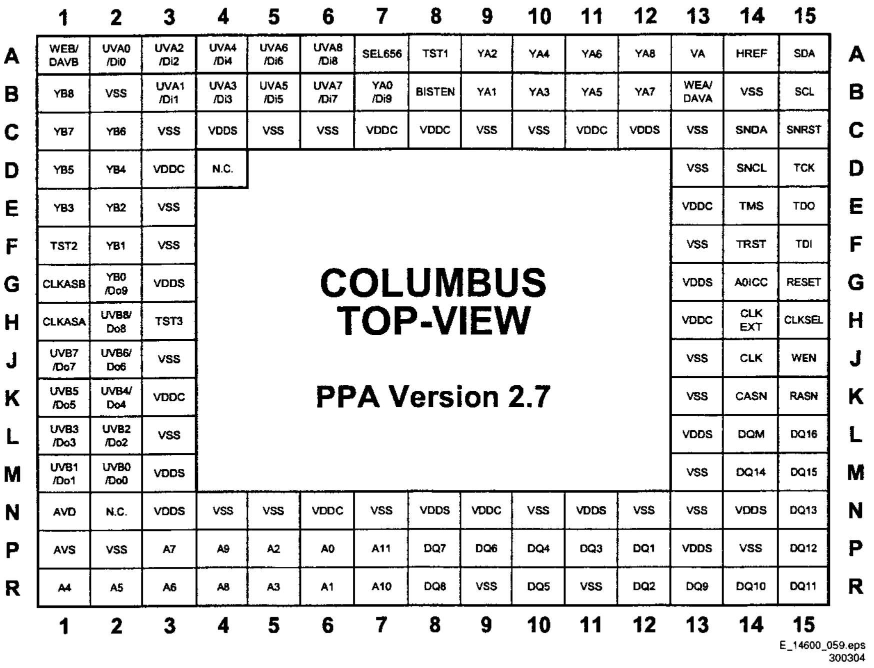
020404

Figure 9-3 Internal Block Diagrams

.9.3 Diagram B3D, T6TU5XB (IC7752)

Figure 1 Package outline (top view)



COLUMBUS TOP-VIEW

PPA Version 2.7

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
A	WEB/ DAVB	UVA0 /Di0	UVA2 /Di2	UVA4 /Di4	UVA6 /Di6	UVA8 /Di8	SEL656	TST1	YA2	YA4	YA6	YA8	VA	HREF	SDA	A
B	YB8	VSS	UVA1 /Di1	UVA3 /Di3	UVA5 /Di5	UVA7 /Di7	YA0 /Di9	BISTEN	YA1	YA3	YA5	YA7	WEA/ DAVA	VSS	SCL	B
C	YB7	YB6	VSS	VDDS	VSS	VSS	VDDC	VDDC	VSS	VSS	VDDC	VDDS	VSS	SNDA	SNRST	C
D	YB5	YB4	VDDC	N.C.									VSS	SNCL	TCK	D
E	YB3	YB2	VSS										VDDC	TMS	TDO	E
F	TST2	YB1	VSS										VSS	TRST	TDI	F
G	CLKASB	YB0 /Do9	VDDS										VDDS	A0ICC	RESET	G
H	CLKASA	UVB8/ Do8	TST3										VDDC	CLK EXT	CLKSEL	H
J	UVB7 /Do7	UVB6/ Do6	VSS										VSS	CLK	WEN	J
K	UVB5 /Do5	UVB4/ Do4	VDDC										VSS	CASN	RASN	K
L	UVB3 /Do3	UVB2 /Do2	VSS										VDDS	DQM	DQ16	L
M	UVB1 /Do1	UVB0 /Do0	VDDS										VSS	DQ14	DQ15	M
N	AVD	N.C.	VDDS	VSS	VSS	VDDC	VSS	VDDS	VDDC	VSS	VDDS	VSS	VSS	VDDS	DQ13	N
P	AVS	VSS	A7	A9	A2	A0	A11	DQ7	DQ6	DQ4	DQ3	DQ1	VDDS	VSS	DQ12	P
R	A4	A5	A6	A8	A3	A1	A10	DQ8	VSS	DQ5	VSS	DQ2	DQ9	DQ10	DQ11	R
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

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Figure 9-4 Pin Configuration

10. Spare Parts List

Set Level

Various

0005	3104 328 27731	Cabinet 32" assy
0005	3104 328 27771	Cabinet 28" assy
0010	3104 308 11221	Back cover assy 32"
0010	3104 308 11231	Back cover assy 28"
0020	3104 304 21091	Corner coil bracket
0020	3104 304 25712	Corner bracket deg.coil
0021	3104 304 21091	Corner coil bracket
0021	3104 304 25712	Corner bracket deg.coil
0022	3104 304 21031	Rot. coil bracket
0024	4822 404 31341	Coil clamp
0032	3104 304 26161	Bottomplate
0038	3104 304 24911	SSB bracket top
0062	3104 301 24021	PTP spring
0108	4822 404 31443	Relief
0290	3111 254 23481	Coil & clamp
1099▲	9301 899 90301	W66ERF042X044
1099▲	9322 173 93682	W76EKW10X73
1116	3104 328 30551	Side I/O assy
1180	3104 328 12141	DC-shift assy
8190	4622 007 51632	Mainscord UK 2mtr.
8190	4622 009 50531	Mainscord EU 2mtr.

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5203▲	2422 549 44621	Coil 28"
5203▲	3104 308 20401	Degausing coil 32"
5205	3128 138 60661	Canceller coil

Large Signal Panel [A]

Various

0011	3104 308 78231	Transistor cooling clip
0020	4822 492 70789	Fix transistor
0030	3104 304 23001	LSP chassisframe
0030	3104 304 24873	LSP Chassis frame
0034	3104 304 23041	DAF bracket EMGS
0037	3104 304 24891	LOT bracket
0050	4822 466 93461	Insulating plate 20 X 25
0065	3104 304 22031	LOT spacer
0066	3104 304 23051	Conn. support EMGS
0067	3104 304 23061	Conn. part EMGS
0072	3104 304 24901	SSB bracket bot.
0080	4822 492 70789	Fix transistor
0125	3104 304 90361	Insulating plate
0320	4822 255 41371	Transistor clamp
0341	4822 492 63524	Transistor clamp
0395	4822 492 70789	Fix transistor
0396	4822 492 70789	Fix transistor
0505	4822 492 62076	Transistor clamp
1200	3139 147 19341	Tuner UV1318S/A I-3
1200	3139 147 19361	Tuner UV1318S/A I U-3
1205	2422 025 17242	Connector 80p f SIMM
1417	4822 265 20723	Connector 2p
1418	2422 025 16374	Connector 2p m
1419	4822 265 20723	Connector 2p
1424	2422 025 11244	Connector 7p m
1491	4822 267 10973	Connector 1p
1497	4822 267 10973	Connector 1p
1498	2422 025 04849	Connector 2p m
1499	2422 025 04849	Connector 2p m
1501	4822 070 35002	Fuse 5A
1502	4822 267 10774	Connector 2p male (red)
1503▲	4822 070 12502	Fuse 2.5A
1505	2422 025 16374	Connector 2p m
1511	4822 265 11253	Fuse holder
1512	4822 265 11253	Fuse holder
1520	3104 301 24181	Spring for Bracket
1521	3104 301 24181	Spring for Bracket
1522	4822 255 41371	Transistor clamp
1550▲	2422 132 07411	Relay 1p 5V 5A G5PA-1
1590	4822 252 60151	DSP-501N-A21F
1601▲	2422 086 10919	Fuse 65V 125mA
1620	4822 267 10735	Connector 3p
1625	2422 025 16382	Connector 3p m
1735	4822 267 10565	Connector 4p
1901	4822 267 10771	Socket 2 x SCART
1902	4822 267 10982	Connector 2p
1936	2422 025 12485	Connector 11p m
1940	2422 025 12485	Connector 11p m
1943	4822 267 10748	Connector 3p
1945	4822 267 10735	Connector 3p
1946	4822 265 41391	Connector 9p
1955	4822 267 10735	Connector 3p
8000	3104 311 03272	Cable 640mm EHT
8193▲	4822 320 20216	Focus cable 364 mm
8194▲	4822 320 20189	Cable HT-focus 44cm Rd
8400	2422 025 16691	Connector 3p m
8417▲	3104 311 04561	Cable 2p3/400/2p3
8424	3104 311 02991	Cable 7p/560/7p Wh
8498	3104 311 04531	Cable 2p/400/2p
8625▲	3104 311 03101	Cable 3p/560/3p Bk
8625	3104 311 04741	Cable 3p/180/3p
8940	3104 311 04651	Cable 11p/140/11p
8955	3104 311 01211	Cable 3p/140/3p Wh

⊣⊢

2100	2252 811 95021	1nF 10% 250V
2101	4822 121 51598	2.2nF 5% 400V
2102▲	4822 124 40248	10µF 20% 63V
2103	2020 552 94427	100pF 5% 50V
2104	4822 123 14025	2200µF 20% 16V
2105	2020 552 94427	100pF 5% 50V
2106	4822 126 13751	47nF 10% 63V
2107▲	4822 121 43855	3.3nF 5% 400V
2108▲	4822 121 70162	10nF 5% 400V
2109	4822 126 14472	1µF 10% 10V 0805
2110	4822 126 14472	1µF 10% 10V 0805
2111▲	4822 121 43526	47nF 5% 250V
2112	5322 126 11583	10nF 10% 50V 0603
2114	2222 338 22104	100nF 20% 275V
2114	2222 338 23104	100nF 20% 275V
2115▲	4822 124 40764	22µF 100V
2116▲	4822 126 13682	100pF 5% 1kV
2118	4822 124 80061	1000µF 20% 25V
2119	4822 123 14025	2200µF 20% 16V
2120▲	4822 126 11524	1.5nF 10% 1kV
2126	4822 123 14025	2200µF 20% 16V
2130	5322 126 11583	10nF 10% 50V 0603
2131	4822 126 13881	470pF 5% 50V
2140▲	4822 124 40248	10µF 20% 63V
2141▲	4822 124 40248	10µF 20% 63V
2144	4822 126 14472	1µF 10% 10V 0805
2145	4822 126 13881	470pF 5% 50V
2147	3198 017 31530	15nF 20% 50V 0603
2148▲	4822 126 10206	2.2nF 10% 500V
2149	4822 126 14472	1µF 10% 10V 0805
2150	5322 126 11583	10nF 10% 50V 0603
2152▲	4822 121 70162	10nF 5% 400V
2154	3198 017 33330	33nF 20% 16V 0603
2154	4822 126 14549	33nF 16V 0603
2200▲	4822 124 40248	10µF 20% 63V
2201	4822 126 13879	220nF +80-20% 16V
2202	4822 126 13473	220nF +80%/-20% 50V
2203▲	4822 124 80195	470µF 20% 10V
2400	2020 021 91445	47µF 20% 200V
2400	4822 124 11575	47µF 20% 160V
2401▲	4822 121 42077	6.8nF 10% 400V
2402	2020 012 93596	22µF 20% 250V
2403	2238 916 15641	22nF 10% 25V 0603
2404	2238 916 15641	22nF 10% 25V 0603
2412	3198 024 44730	47nF 50V 0603
2413▲	4822 124 12255	10µF 20% 50V
2414	3198 024 44730	47nF 50V 0603
2415	4822 126 13883	220pF 5% 50V
2417	4822 126 14076	220nF +80/-20% 25V
2419▲	4822 126 14237	470pF 10% 2kV
2420	4822 121 70581	1.5nF 5% 2kV
2420	4822 121 70595	1.2nF 5% 2kV
2421	2038 301 00312	1.2µF 5% 250V
2425▲	4822 121 10526	9.1nF 5% 2kV
2425	4822 121 70435	10nF 5% 2kV
2426	4822 121 10653	22nF 5% 630V
2430▲	4822 126 10206	2.2nF 10% 500V
2431▲	4822 126 10206	2.2nF 10% 500V
2433	2022 333 00163	360nF 5% 250V
2433	2222 479 90022	0.43µF 250V
2440	2022 552 05679	1µF 10% 16V 0805
2441	5322 122 32654	22nF 10% 63V 0805
2442	5322 122 31866	6.8nF 10% 63V
2443	9965 000 09661	470pF 50V 10%
2445	5322 122 32654	22nF 10% 63V 0805
2448	5322 122 32268	470pF 5% 50V 0805 NP0
2450▲	5322 121 42578	100nF 5% 250V
2451	2020 012 93757	1000µF 20% 10V
2454	3198 017 31530	15nF 20% 50V 0603
2455	5322 126 11578	1nF 10% 50V 0603
2457	2020 552 96804	15nF 10% 50V 0805
2458	4822 126 14241	330pF 0603 50V
2460	4822 124 81144	1000µF 16V
2461	4822 122 31169	1.5nF 10% 500V
2462	4822 124 80061	1000µF 20% 25V
2463▲	4822 122 31177	470pF 10% 500V
2464	4822 124 80061	1000µF 20% 25V
2465▲	4822 122 31177	470pF 10% 500V
2466	2238 586 59812	100nF 20% 50V 0603
2468▲	4822 122 31177	470pF 10% 500V
2480	5322 126 11582	6.8nF 10% 63V
2482	3198 017 34730	47nF 16V 0603
2483	4822 126 14238	2.2nF 50V 0603
2490	2020 021 91773	100µF 20% 10V
2490▲	9965 000 14169	100µF 10V 20%
2491▲	4822 124 81151	22µF 50V
2492▲	9965 000 14169	100µF 10V 20%
2494	2238 780 15654	220nF 10% 16V 0805
2495	2020 552 96326	220nF 10% 16V
2495	2238 780 15654	220nF 10% 16V 0805
2497	4822 126 12105	33nF 5% 50V 0805
2499	5322 126 11579	3.3nF 10% 63V
2501	4822 126 13449	1nF 10% 2kV
2501	4822 126 14053	1nF 10% 2kV
2503▲	5322 121 42489	33nF 5% 250V
2504	2238 916 15641	22nF 10% 25V 0603
2505	2252 811 95018	2.2nF 20% 250V
2506▲	5322 121 42386	100nF 5% 63V
2507	2222 338 22474	470nF 20% 275V
2508	2222 338 23223	22nF 20% 275V
2508	4822 124 11913	22nF 20% 275V
2509	2222 338 23223	22nF 20% 275V
2509	4822 124 11913	22nF 20% 275V
2510	4822 126 13449	1nF 10% 2kV
2510	4822 126 14053	1nF 10% 2kV
2511	4822 124 12417	2200µF 20% 25V
2512	4822 124 12417	2200µF 20% 25V
2513	4822 126 13881	470pF 5% 50V
2514	4822 126 14238	2.2nF 50V 0603
2515	4822 124 80096	47µF 200V
2516	2020 024 90743	220µF 20% 400V
2517▲	4822 121 70162	10nF 5% 400V
2518▲	4822 122 31211	100pF 10% 500V
2519▲	4822 126 10206	2.2nF 10% 500V
2520	2222 338 22104	100nF 20% 275V
2520	2222 338 23104	100nF 20% 275V
2522▲	4822 126 10206	2.2nF 10% 500V
2525	4822 126 14247	1.5nF 50V 0603
2528	4822 126 14472	1µF 10% 10V 0805
2530	4822 126 14472	1µF 10% 10V 0805
2531▲	4822 122 31177	470pF 10% 500V
2535	4822 126 13193	4.7nF 10% 63V
2537	2222 338 23223	22nF 20% 275V
2537	4822 124 11913	22nF 20% 275V
2538	4822 122 33177	10nF 20% 50V
2540▲	4822 124 40248	10µF 20% 63V
2541▲	4822 122 31211	100pF 10% 500V
2542	4822 124 80061	1000µF 20% 25V
2543	4822 124 80061	1000µF 20% 25V
2544	4822 126 14238	2.2nF 50V 0603
2601	2238 586 59812	100nF 20% 50V 0603
2603	4822 126 13883	220pF 5% 50V
2604	4822 126 13473	220nF +80%/-20% 50V
2605	4822 126 13883	220pF 5% 50V
2620	4822 126 13473	220nF +80%/-20% 50V
2621	2238 586 59812	100nF 20% 50V 0603
2622▲	4822 124 40255	100µF 20% 63V
2623	4822 126 14238	2.2nF 50V 0603
2624▲	4822 121 51319	1µF 10% 63V
2625▲	4822 121 51319	1µF 10% 63V
2627▲	5322 124 40641	10µF 20% 100V
2628▲	4822 124 40255	100µF 20% 63V
2630	4822 126 14491	2.2µF 10V 0805
2631	4822 126 14491	2.2µF 10V 0805
2633	5322 126 11579	3.3nF 10% 63V
2635	2238 586 59812	100nF 20% 50V 0603
2642▲	4822 124 40255	100µF 20% 63V
2653	5322 126 11579	3.3nF 10% 63V
2656	2238 916 15641	22nF 10% 25V 0603
2657	2238 916 15641	22nF 10% 25V 0603
2659	2238 916 15641	22nF 10% 25V 0603
2660	5322 126 11578	1nF 10% 50V 0603
2702	3198 016 31020	1nF 25V 0603
2704	3198 016 31020	1nF 25V 0603
2705	4822 126 13482	470nF +80%/-20% 16V
2706	4822 126 14585	100nF 10% 0805 50V
2707	4822 126 14076	220nF +80/-20% 25V
2708	4822 126 14076	220nF +80/-20% 25V
2709	4822 126 13881	470pF 5% 50V
2710	4822 126 13881	470pF 5% 50V
2711	3198 016 31020	1nF 25V 0603
2712	2020 552 96683	220nF 10% 50V

713	4822 126 14076	220nF +80/-20% 25V
714	3198 017 33330	33nF 20% 16V 0603
714	4822 126 14549	33nF 16V 0603
715	3198 016 31020	1nF 25V 0603
716	4822 126 14241	330pF 0603 50V
717▲	5322 121 42498	680nF 5% 63V
718	2222 867 15339	33pF 5% 50V 0603
719	3198 016 31020	1nF 25V 0603
720	4822 126 14076	220nF +80/-20% 25V
721	4822 126 13881	470pF 5% 50V
722	4822 126 13881	470pF 5% 50V
724	2020 552 96683	220nF 10% 50V
726	3198 017 33330	33nF 20% 16V 0603
726	4822 126 14549	33nF 16V 0603
727	3198 016 31020	1nF 25V 0603
728	4822 126 14241	330pF 0603 50V
729▲	5322 121 42498	680nF 5% 63V
777	2020 552 96684	470nF 10% 25V 0805
778▲	4822 124 41751	47µF 20% 50V
779	2020 552 96684	470nF 10% 25V 0805
780	2020 552 96684	470nF 10% 25V 0805
781	2020 552 96684	470nF 10% 25V 0805
786	2238 916 15641	22nF 10% 25V 0603
800	2222 375 90188	390pF 5% 2kV
821	2222 479 90166	68pF 5% 400V
890	2222 375 90188	390pF 5% 2kV
914▲	4822 124 40248	10µF 20% 63V
915▲	4822 124 12255	10µF 20% 50V
917	4822 126 14585	100nF 10% 0805 50V
929	4822 126 13879	220nF +80-20% 16V
940▲	9965 000 14169	100µF 10V 20%
941	4822 126 14585	100nF 10% 0805 50V
942	4822 126 14585	100nF 10% 0805 50V
943	4822 126 14585	100nF 10% 0805 50V
944	4822 126 13879	220nF +80-20% 16V
945	4822 126 14491	2.2µF 10V 0805
946	4822 126 14491	2.2µF 10V 0805
947	2020 012 93843	4.7µF 20% 50V
947	2020 021 90141	4.7µF 20% 50V
948	9965 000 14169	100µF 10V 20%
949	9965 000 14169	100µF 10V 20%
950	5322 126 11583	10nF 10% 50V 0603
951	5322 126 11583	10nF 10% 50V 0603
952	5322 126 11578	1nF 10% 50V 0603
985	4822 126 14315	390pF 5% 50V 0603
987	5322 122 31863	330pF 5% 63V 0805
989	5322 122 31863	330pF 5% 63V 0805
990	5322 122 31863	330pF 5% 63V 0805
991	5322 122 32531	100pF 5% 50V
992	5322 122 31863	330pF 5% 63V 0805
993	5322 122 32531	100pF 5% 50V
994	5322 122 31863	330pF 5% 63V 0805
995	5322 122 31863	330pF 5% 63V 0805
996	5322 122 31863	330pF 5% 63V 0805
997	5322 122 31863	330pF 5% 63V 0805
998	5322 122 32531	100pF 5% 50V
999	5322 122 32531	100pF 5% 50V

-WW-

101	4822 053 20106	10MΩ 5% 0.25W
102	2312 915 11002	1kΩ 1% 0.5W
102	4822 050 21002	1kΩ 1% 0.6W
103	2312 915 11002	1kΩ 1% 0.5W
103	4822 050 21002	1kΩ 1% 0.6W
104	4822 116 52195	47Ω 5% 0.5W
105	4822 050 11002	1kΩ 1% 0.4W
106	4822 116 52256	2.2kΩ 5% 0.5W
107	4822 116 52256	2.2kΩ 5% 0.5W
108	2122 101 02083	1.5Ω 5% 0.5W
111	4822 053 10152	1.5kΩ 5% 1W
113	4822 116 52186	22Ω 5% 0.5W
114	4822 116 83872	220Ω 5% 0.5W
115	4822 116 52257	22kΩ 5% 0.5W
116	4822 116 52257	22kΩ 5% 0.5W
117	4822 116 52195	47Ω 5% 0.5W
118	2122 101 02083	1.5Ω 5% 0.5W
120	4822 051 20109	10Ω 5% 0.1W
123	4822 051 30109	10Ω 5% 0.062W
124	4822 116 52199	68Ω 5% 0.5W
125	4822 116 52182	15Ω 5% 0.5W
126	4822 050 21003	10kΩ 1% 0.6W
127	4822 116 52289	5.6kΩ 5% 0.5W
130	4822 051 30479	47Ω 5% 0.062W
131	4822 051 30471	47Ω 5% 0.062W
132	4822 051 20479	47kΩ 5% 0.1W
133	4822 117 10834	47kΩ 1% 0.1W
134	4822 051 30102	1kΩ 5% 0.062W
135	4822 051 30101	100Ω 5% 0.062W
136	4822 051 30109	10Ω 5% 0.062W
137	4822 050 24702	4.7kΩ 1% 0.6W
140	4822 051 20223	22kΩ 5% 0.1W
141	4822 116 52263	2.7kΩ 5% 0.5W
3142	4822 051 30332	3.3Ω 5% 0.062W
3143	4822 051 30101	100Ω 5% 0.062W
3144	4822 116 83883	470Ω 5% 0.5W
3150	4822 117 11373	100Ω 1% 0805
3151	4822 051 30109	10Ω 5% 0.062W
3152	4822 051 30102	1kΩ 5% 0.062W
3153	4822 051 20472	4.7kΩ 5% 0.1W
3155	4822 051 30101	100Ω 5% 0.062W
3156	5322 117 13017	100Ω 1% 0.063W 0603
3157	4822 051 30103	10kΩ 5% 0.062W
3158	2322 704 64709	47Ω 1% 0.063W 0603
3158	5322 117 13021	47Ω 1% 0.063W 0603
3159	4822 051 30103	10kΩ 5% 0.062W
3160	4822 051 30102	1kΩ 5% 0.062W
3161▲	4822 052 10221	220Ω 5% 0.33W
3162	4822 116 83883	470Ω 5% 0.5W
3164	4822 117 13632	100kΩ 1% 0603 0.62W
3165	4822 051 30331	330Ω 5% 0.062W
3168	4822 051 20472	4.7kΩ 5% 0.1W
3170	4822 116 52291	56kΩ 5% 0.5W
3200	4822 117 11373	100Ω 1% 0805
3201	4822 117 11373	100Ω 1% 0805
3210	4822 051 30102	1kΩ 5% 0.062W
3211	4822 051 30222	2.2kΩ 5% 0.062W
3212	4822 051 30101	100Ω 5% 0.062W
3213	4822 116 52182	15Ω 5% 0.5W
3250	4822 051 20223	22kΩ 5% 0.1W
3261	4822 117 11373	100Ω 1% 0805
3262	4822 117 11373	100Ω 1% 0805
3400	4822 052 11108	1Ω 5% 0.5W
3401	2120 105 93473	27Ω 5% 3W
3402	4822 053 10121	120Ω 5% 1W
3403	4822 116 52175	100Ω 5% 0.5W
3404	4822 051 30471	47Ω 5% 0.062W
3406	4822 117 11373	100Ω 1% 0805
3407	4822 051 30103	10kΩ 5% 0.062W
3409	4822 050 11002	1kΩ 1% 0.4W
3410	4822 051 20479	47kΩ 5% 0.1W
3411	2122 101 02111	39Ω 5% 0.5W
3412	4822 117 11817	1.2kΩ 1% 0.0625W
3414	4822 051 30331	330Ω 5% 0.062W
3415	3198 012 31590	15Ω 5% 3W
3417	4822 116 52176	10Ω 5% 0.5W
3418	4822 050 25603	56kΩ 1% 0.6W
3419	4822 051 30474	470kΩ 5% 0.062W
3420	4822 051 30332	3.3Ω 5% 0.062W
3421	4822 051 30474	470kΩ 5% 0.062W
3422	4822 051 30332	3.3Ω 5% 0.062W
3423	4822 053 10688	6.8Ω 5% 1W
3425	4822 116 52176	10Ω 5% 0.5W
3426	4822 116 52176	10Ω 5% 0.5W
3427	4822 051 30105	1MΩ 5% 0.062W
3427	4822 051 30684	680kΩ 5% 0.062W
3429	4822 051 30105	1MΩ 5% 0.062W
3431	2306 207 03151	150Ω 5% 0.5W
3437	4822 051 20109	10Ω 5% 0.1W
3440	4822 051 30102	1kΩ 5% 0.062W
3441	4822 051 30223	22kΩ 5% 0.062W
3442	4822 051 30474	470kΩ 5% 0.062W
3443	4822 051 30684	680kΩ 5% 0.062W
3444	4822 051 20108	1Ω 5% 0.1W
3447	4822 117 11373	100Ω 1% 0805
3449	4822 052 10101	100Ω 5% 0.33W
3450	4822 050 21003	10kΩ 1% 0.6W
3450	4822 116 52238	12kΩ 5% 0.5W
3451	4822 050 21003	10kΩ 1% 0.6W
3454	4822 051 20108	1Ω 5% 0.1W
3454	4822 051 20223	22kΩ 5% 0.1W
3455	4822 117 12902	8.2kΩ 1% 0.063W 0603
3455	5322 117 13056	8.2kΩ 1% 0.063W 0603
3456	4822 117 12903	1.8kΩ 1% 0.063W 0603
3457	4822 051 30152	1.5Ω 5% 0.062W
3458	4822 051 30471	47Ω 5% 0.062W
3459	4822 051 30272	2.7kΩ 5% 0.062W
3460	4822 052 10108	1Ω 5% 0.33W
3461	4822 052 10108	1Ω 5% 0.33W
3462	4822 052 11108	1Ω 5% 0.5W
3463	4822 052 11108	1Ω 5% 0.5W
3464	4822 052 11108	1Ω 5% 0.5W
3465	4822 052 11108	1Ω 5% 0.5W
3466	4822 051 30472	4.7Ω 5% 0.062W
3467	4822 117 13632	100kΩ 1% 0603 0.62W
3472	4822 051 30393	39kΩ 5% 0.062W
3474	4822 051 30563	56kΩ 5% 0.062W
3475	4822 051 30472	4.7Ω 5% 0.062W
3476	4822 116 83874	220kΩ 5% 0.5W
3478	4822 116 52175	100Ω 5% 0.5W
3479	4822 052 10478	4.7Ω 5% 0.33W
3480	4822 052 10478	4.7Ω 5% 0.33W
3481	2322 750 61001	100Ω 5% 1206
3482	4822 051 30221	220Ω 5% 0.062W
3483	4822 117 12903	1.8kΩ 1% 0.063W 0603
3485	4822 051 30471	47Ω 5% 0.062W
3486	2322 704 67502	7.5kΩ 1% 0.5W
3487	5322 117 13056	8.2kΩ 1% 0.063W 0603
3488	4822 050 21005	1MΩ 1% 0.6W
3489	4822 051 30103	10kΩ 5% 0.062W
3490	4822 051 30332	3.3Ω 5% 0.062W
3491	4822 117 12925	47kΩ 1% 0.063W 0603
3492	4822 116 52175	100Ω 5% 0.5W
3493	4822 050 21504	150kΩ 1% 0.6W
3496	4822 051 30272	2.7kΩ 5% 0.062W
3497	4822 051 30333	33kΩ 5% 0.062W
3501	4822 116 83872	220Ω 5% 0.5W
3504	4822 051 30222	2.2kΩ 5% 0.062W
3505	4822 116 52257	22kΩ 5% 0.5W
3506	4822 051 30562	5.6kΩ 5% 0.063W 0603
3507	4822 050 21604	160kΩ 1% 0.6W
3508	4822 116 52182	15Ω 5% 0.5W
3509	2122 550 00158	VDR 1mA 612V
3510	4822 117 11454	820Ω 1% 0.1W
3511	4822 053 11222	2.2kΩ 5% 2W
3512	4822 117 12891	220kΩ 1%
3513	4822 116 52272	330k 5% 0.5W
3514	2322 193 53397	0.39Ω 5% 0.6W
3515	2322 193 53397	0.39Ω 5% 0.6W
3517	4822 117 10834	47kΩ 1% 0.1W
3518	4822 116 52245	150kΩ 5% 0.5W
3519	4822 051 30102	1kΩ 5% 0.062W
3520	4822 053 11333	33kΩ 5% 2W
3521	4822 053 21475	4.7MΩ 5% 0.5W
3522	4822 117 11507	6.8kΩ 1% 0.1W
3523	4822 051 20105	1MΩ 5% 0.1W
3524	4822 051 30333	33kΩ 5% 0.062W
3525	4822 051 30479	47Ω 5% 0.062W
3526	4822 116 83303	0.1Ω 2W
3527	4822 117 11951	2kΩ 1% 0.1W
3528	4822 051 30103	10kΩ 5% 0.062W
3529	4822 051 30472	4.7Ω 5% 0.062W
3530	4822 051 30102	1kΩ 5% 0.062W
3531	4822 117 11507	6.8kΩ 1% 0.1W
3532	4822 117 12925	47kΩ 1% 0.063W 0603
3533	4822 116 52182	15Ω 5% 0.5W
3534	4822 117 12925	47kΩ 1% 0.063W 0603
3535	4822 051 30479	47Ω 5% 0.062W
3536	4822 052 10102	1kΩ 5% 0.33W
3537	4822 116 52182	15Ω 5% 0.5W
3540	4822 050 23303	33kΩ 1% 0.6W
3543	4822 050 24708	4.7Ω 1% 0.6W
3547	4822 051 30008	Jumper 0603
3549	2322 704 62204	220kΩ 1% 0.063W 0603
3549	5322 117 13039	222kΩ 1% 0.063W 0603
3550	2122 663 00018	PTC 4.7Ω 20%
3551	4822 116 83872	220Ω 5% 0.5W
3552	4822 051 30222	2.2kΩ 5% 0.062W
3553	4822 051 30103	10kΩ 5% 0.062W
3610	4822 051 30223	22kΩ 5% 0.062W
3611	4822 051 30222	2.2kΩ 5% 0.062W
3620	2122 101 02083	1.5Ω 5% 0.5W
3620	4822 050 21808	1.8Ω 1% 0,6W
3621	4822 116 80176	1Ω 5% 0.5W
3622	2122 101 02083	1.5Ω 5% 0.5W
3622	4822 116 80176	1Ω 5% 0.5W
3623	4822 116 52251	18kΩ 5% 0.5W
3624	4822 052 10158	1.5Ω 5% 0.33W
3625	4822 053 10121	120Ω 5% 1W
3625	4822 116 52219	330Ω 5% 0.5W
3626	4822 116 52199	68Ω 5% 0.5W
3626	4822 116 52219	330Ω 5% 0.5W
3627	4822 051 20223	22kΩ 5% 0.1W
3630	4822 051 30333	33kΩ 5% 0.062W
3631	4822 051 30222	2.2kΩ 5% 0.062W
3632	4822 051 30393	39kΩ 5% 0.062W
3633	4822 051 30563	56kΩ 5% 0.062W
3634	4822 116 83882	39kΩ 5% 0.5W
3635	4822 116 52219	330Ω 5% 0.5W
3636	4822 051 30223	22kΩ 5% 0.062W
3637	4822 051 30103	10kΩ 5% 0.062W
3638	4822 051 30474	470kΩ 5% 0.062W
3639	4822 051 30563	56kΩ 5% 0.062W
3640	4822 051 30222	2.2kΩ 5% 0.062W
3641	4822 116 83883	470Ω 5% 0.5W
3642	4822 101 11193	47kΩ 30% 0.1W
3643	4822 051 30334	330kΩ 5% 0.062W
3644	4822 051 30221	220Ω 5% 0.062W
3645	4822 116 52245	150kΩ 5% 0.5W
3646	4822 117 12925	47kΩ 1% 0.063W 0603
3647	4822 051 20228	2.2Ω 5% 0.1W
3649	4822 051 30103	10kΩ 5% 0.062W
3653	4822 051 20223	22kΩ 5% 0.1W
3655	4822 051 30123	12kΩ 5% 0.1W
3656	4822 117 11817	1.2kΩ 1% 0.0625W
3657	4822 051 30223	22kΩ 5% 0.062W
3658	4822 051 30223	22kΩ 5% 0.062W
3659	4822 051 30222	2.2kΩ 5% 0.062W
3660	4822 051 30562	5.6kΩ 5% 0.063W 0603
3661	4822 116 52219	330Ω 5% 0.5W
3662	4822 051 30152	1.5Ω 5% 0.062W

3665	4822 051 30479	47Ω 5% 0.062W
3681	4822 116 52207	1.2kΩ 5% 0.5W
3682	4822 117 13632	100kΩ 1% 0603 0.62W
3683	4822 051 30103	10kΩ 5% 0.062W
3684	4822 051 30682	6.8Ω 5% 0.062W
3685	4822 051 30273	27kΩ 5% 0.062W
3686	4822 051 30563	56kΩ 5% 0.062W
3687	4822 116 52207	1.2kΩ 5% 0.5W
3688	4822 051 20684	680kΩ 5% 0.1W
3690	4822 051 30109	10Ω 5% 0.062W
3701	4822 051 30103	10kΩ 5% 0.062W
3702	4822 051 30682	6.8Ω 5% 0.062W
3703	4822 051 30333	33kΩ 5% 0.062W
3704	4822 117 10833	10kΩ 1% 0.1W
3705	4822 051 20828	8.2Ω 5% 0.1W
3706	2322 704 65102	5.1kΩ 1% 0603
3707	4822 051 30683	68kΩ 5% 0.062W
3708	4822 051 30563	56kΩ 5% 0.062W
3709	4822 117 11503	220Ω 1% 0.1W
3710	4822 051 30223	22kΩ 5% 0.062W
3711	4822 050 21204	120kΩ 1% 0,6W
3712	4822 117 12706	10kΩ 1% 0.063W 0603
3713	4822 116 83884	47kΩ 5% 0.5W
3714	4822 117 12925	47kΩ 1% 0.063W 0603
3715	4822 117 12925	47kΩ 1% 0.063W 0603
3716	4822 117 12925	47kΩ 1% 0.063W 0603
3717	4822 117 13632	100kΩ 1% 0603 0.62W
3718	4822 117 13632	100kΩ 1% 0603 0.62W
3721	2322 704 65102	5.1kΩ 1% 0603
3722	4822 051 30683	68kΩ 5% 0.062W
3723	4822 051 30563	56kΩ 5% 0.062W
3724	4822 117 11503	220Ω 1% 0.1W
3725	4822 051 30223	22kΩ 5% 0.062W
3726	4822 117 11503	220Ω 1% 0.1W
3727	4822 117 11503	220Ω 1% 0.1W
3743	4822 117 11449	2.2kΩ 5% 0.1W 0805
3745	4822 051 30102	1kΩ 5% 0.062W
3746	4822 051 30223	22kΩ 5% 0.062W
3748	4822 051 30008	Jumper 0603
3749	4822 116 83883	470Ω 5% 0.5W
3750	4822 117 11449	2.2kΩ 5% 0.1W 0805
3760	4822 117 12891	220kΩ 1%
3790	4822 051 30272	2.7kΩ 5% 0.062W
3791	4822 051 30272	2.7kΩ 5% 0.062W
3792	4822 051 30103	10kΩ 5% 0.062W
3793	4822 051 30103	10kΩ 5% 0.062W
3798	4822 051 30153	15kΩ 5% 0.062W
3903	4822 051 20561	560Ω 5% 0.1W
3904	4822 052 10688	6.8Ω 5% 0.33W
3907	4822 051 20479	47kΩ 5% 0.1W
3910	4822 117 12521	68Ω 1% 0.1W
3928	4822 051 30008	Jumper 0603
3938	4822 117 11373	100Ω 1% 0805
3939	4822 051 30103	10kΩ 5% 0.062W
3940	4822 051 20561	560Ω 5% 0.1W
3941	4822 052 10688	6.8Ω 5% 0.33W
3942	4822 117 11373	100Ω 1% 0805
3943	4822 051 30103	10kΩ 5% 0.062W
3945	4822 117 12955	2.7kΩ 1% 0.1W 0805
3959	4822 117 10353	150Ω 1% 0.1W
3960	4822 117 10353	150Ω 1% 0.1W
3961	4822 117 10353	150Ω 1% 0.1W
3962	4822 117 10353	150Ω 1% 0.1W
3965	4822 117 10353	150Ω 1% 0.1W
3966	4822 117 10353	150Ω 1% 0.1W
3967	4822 116 52201	75Ω 5% 0.5W
3968	4822 116 52201	75Ω 5% 0.5W
3969	4822 051 20008	Jumper 0805
3970	4822 051 20008	Jumper 0805
3971	4822 116 52201	75Ω 5% 0.5W
3972	2122 101 02073	82Ω 5% 0.5W
3973	4822 116 52201	75Ω 5% 0.5W
3974	4822 116 52201	75Ω 5% 0.5W
3975	4822 116 52201	75Ω 5% 0.5W
3976	4822 117 11373	100Ω 1% 0805
3977	4822 117 11373	100Ω 1% 0805
3978	4822 051 20008	Jumper 0805
3978	4822 117 11373	100Ω 1% 0805
3979	4822 116 52201	75Ω 5% 0.5W
3980	4822 051 20008	Jumper 0805
3980	4822 117 11373	100Ω 1% 0805
3981	4822 051 20822	8.2kΩ 5% 0.1W
3982	4822 051 20392	2.9kΩ 5% 0.1W
3983	4822 116 52175	100Ω 5% 0.5W
3984	4822 051 20822	8.2kΩ 5% 0.1W
3985	4822 116 52201	75Ω 5% 0.5W
3986	4822 116 52276	3.9Ω 5% 0.5W
3987	4822 116 52175	100Ω 5% 0.5W
3988	4822 051 10102	1kΩ 2% 0.25W
3989	4822 050 11002	1kΩ 1% 0.4W
3990	4822 117 10353	150Ω 1% 0.1W
3991	4822 117 10353	150Ω 1% 0.1W
3992	4822 117 10353	150Ω 1% 0.1W
3993	4822 116 83868	150Ω 5% 0.5W

3994	4822 051 10102	1kΩ 2% 0.25W
3995	4822 051 10102	1kΩ 2% 0.25W
3996	4822 117 10353	150Ω 1% 0.1W
3997	4822 117 10353	150Ω 1% 0.1W
3998	4822 116 52207	1.2kΩ 5% 0.5W
9103	4822 051 20008	Jumper 0805
9105	4822 051 20008	Jumper 0805
9107	4822 051 30008	Jumper 0603
9108	4822 051 30008	Jumper 0603
9128	4822 051 30008	Jumper 0603
9200	4822 051 20008	Jumper 0805
9203	4822 051 30008	Jumper 0603
9204	4822 051 30008	Jumper 0603
9207	4822 051 30008	Jumper 0603
9208	4822 051 20008	Jumper 0805
9209	4822 051 20008	Jumper 0805
9210	4822 051 30008	Jumper 0603
9211	4822 051 30008	Jumper 0603
9212	4822 051 20008	Jumper 0805
9214	4822 051 20008	Jumper 0805
9215	4822 051 20008	Jumper 0805
9216	4822 051 20008	Jumper 0805
9217	4822 051 20008	Jumper 0805
9218	4822 051 20008	Jumper 0805
9219	4822 051 20008	Jumper 0805
9221	4822 051 20008	Jumper 0805
9222	4822 051 20008	Jumper 0805
9251	4822 051 30008	Jumper 0603
9261	4822 051 20008	Jumper 0805
9262	4822 051 20008	Jumper 0805
9263	4822 051 20008	Jumper 0805
9264	4822 051 20008	Jumper 0805
9418	4822 051 20008	Jumper 0805
9421	4822 051 20008	Jumper 0805
9422	4822 051 30008	Jumper 0603
9424	4822 051 30008	Jumper 0603
9427	4822 051 30008	Jumper 0603
9428	4822 051 30008	Jumper 0603
9429	4822 051 30008	Jumper 0603
9430	4822 051 30008	Jumper 0603
9431	4822 051 30008	Jumper 0603
9432	4822 051 30008	Jumper 0603
9433	4822 051 30008	Jumper 0603
9434	4822 051 30008	Jumper 0603
9435	4822 051 30008	Jumper 0603
9436	4822 051 30008	Jumper 0603
9437	4822 051 30008	Jumper 0603
9438	4822 051 30008	Jumper 0603
9440	4822 051 30008	Jumper 0603
9441	4822 051 30008	Jumper 0603
9443	4822 051 30008	Jumper 0603
9481	4822 051 30008	Jumper 0603
9483	4822 051 30008	Jumper 0603
9499	4822 051 30008	Jumper 0603
9505	4822 051 20008	Jumper 0805
9560	4822 051 30008	Jumper 0603
9561	4822 051 20008	Jumper 0805
9621	4822 051 30008	Jumper 0603
9624	4822 051 30008	Jumper 0603
9676	4822 051 30008	Jumper 0603
9677	4822 051 20008	Jumper 0805
9702	4822 051 30008	Jumper 0603
9704	4822 051 20008	Jumper 0805
9705	4822 051 20008	Jumper 0805
9706	4822 051 30471	47Ω 5% 0.062W
9707	4822 051 30008	Jumper 0603
9713	4822 051 30008	Jumper 0603
9714	4822 051 20008	Jumper 0805
9716	4822 051 20008	Jumper 0805
9717	4822 051 30008	Jumper 0603
9908	4822 051 30008	Jumper 0603
9927	4822 051 20008	Jumper 0805
9928	4822 051 20008	Jumper 0805
9960	4822 051 30008	Jumper 0603
9962	4822 051 30008	Jumper 0603
9966	4822 051 30008	Jumper 0603
9979	4822 051 20008	Jumper 0805
9981	4822 051 20008	Jumper 0805
9985	4822 051 30008	Jumper 0603
9986	4822 051 20008	Jumper 0805
9987	4822 051 20008	Jumper 0805
9988	4822 051 20008	Jumper 0805
9989	4822 051 20008	Jumper 0805
9990	4822 051 20008	Jumper 0805
9991	4822 051 20008	Jumper 0805
9992	4822 051 20008	Jumper 0805
9993	4822 051 20008	Jumper 0805
9994	4822 051 20008	Jumper 0805
9997	4822 051 20008	Jumper 0805

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5100	3104 308 20431	Transformer BS25126-03
5102▲	2422 535 94639	10μH 20%
5103	4822 526 10704	Bead 100MHz
5104	4822 157 11411	Bead 100MHz
5105▲	2422 535 94632	1μH 30%
5106	4822 526 10704	Bead 100MHz
5111	4822 157 11411	Bead 100MHz
5113	4822 157 11411	Bead 100MHz
5130	4822 157 11411	Bead 100MHz
5400▲	4822 157 11869	33μH 10%
5401▲	2422 536 00059	12μH 10%
5402	3198 018 21510	150μH 10%
5410▲	3128 138 39091	Transformer CE165T
5411	4822 157 71097	0.56μH 10%
5421	3104 308 20591	Linearity coil 32"
5421	3104 308 20691	Linearity coil 5μH 36"
5422▲	3104 308 20671	Bridge coil BC21215-01
5423	4822 157 71097	0.56μH 10%
5425	4822 157 11411	Bead 100MHz
5426	4822 157 70826	2.4μH
5430▲	3104 308 20491	LOT 1392.9014A
5430▲	3104 308 21031	Trans. 1392.9010C
5461	4822 157 11411	Bead 100MHz
5463	4822 157 11411	Bead 100MHz
5465	4822 157 11411	Bead 100MHz
5467	4822 157 11411	Bead 100MHz
5469	4822 157 11411	Bead 100MHz
5503▲	2422 549 44877	Filter 45mH DMF2845H
5505	4822 157 11411	Bead 100MHz
5506▲	2422 531 02501	Transf. S30940-04
5507	4822 157 11411	Bead 100MHz
5509	4822 157 11411	Bead 100MHz
5511	3104 308 20511	Filter mains 40mH
5513▲	4822 157 11869	33μH 10%
5514▲	4822 157 11869	33μH 10%
5515▲	4822 157 11869	33μH 10%
5620	4822 157 11771	0.09μH 10%
5621▲	3104 308 20571	Transf. S13974-03
5701	2422 536 00385	68μH 10%
5702	2422 536 00385	68μH 10%
5703	4822 157 11716	Bead 30Ω at 100MHz
5707	4822 157 11411	Bead 100MHz
5708	4822 157 11411	Bead 100MHz
5711	4822 157 11411	Bead 100MHz
5712	4822 157 11411	Bead 100MHz
5800▲	2422 531 02437	Transformer S21975-03
5801	2422 531 02435	Transformer C948-02
5901▲	4822 157 11299	10μH 5%
5902▲	4822 157 11869	33μH 10%
5903	4822 157 10359	33μH
5904	4822 157 11411	Bead 100MHz

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6080	4822 130 11397	BAS316
6082	4822 130 11528	1PS76SB10
6082	4822 130 80622	BAT54
6084	4822 130 11522	UDZ15B
6103	4822 130 41601	BYV95A
6105	4822 130 34281	BZX79-B15
6106	3198 010 52290	BZX79-B22
6108	4822 130 11528	1PS76SB10
6109	4822 130 31083	BYW55
6110	9340 418 70133	BYV27-600
6111	9322 161 78682	SB360L-7024
6112	4822 130 11551	UDZS10B
6115	4822 130 11528	1PS76SB10
6120	4822 130 30621	1N4148
6121	4822 130 30621	1N4148
6122	3198 010 53980	BZX79-B3V9
6130	4822 130 11596	BYW29EX-200
6132	9322 171 80685	BZX384-B6V8
6133	4822 130 11397	BAS316
6134	4822 130 11397	BAS316
6141	4822 130 11522	UDZ15B
6141	9322 129 42685	BZM55-C15
6142	4822 130 11528	1PS76SB10
6144	4822 130 11397	BAS316
6147	4822 130 34278	BZX79-B6V8
6148	5322 130 31938	BYV27-200
6149	4822 130 11397	BAS316
6200	9340 548 71115	PDZ33B
6201	4822 130 11397	BAS316
6202	4822 130 11397	BAS316
6400	4822 130 70055	BYV27-400
6405	4822 130 34383	BZX79-B47
6406	4822 130 11397	BAS316
6407	4822 130 11397	BAS316
6408	4822 130 41601	BYV95A
6421	4822 130 10753	BY359X-1500
6422	4822 130 10218	BY229X-800
6442	4822 130 11522	UDZ15B
6455	4822 130 11397	BAS316
6456	5322 130 34337	BAV99

457	9322 102 64685	UDZ2.7B
458	3198 020 55680	BZX384-C5V6
460	4822 130 41487	BYV95C
462▲	9322 127 32682	BYW76-RAS15/10
462	9322 192 67682	BYW76-PK1
464▲	9322 127 32682	BYW76-RAS15/10
464	9322 192 67682	BYW76-PK1
480	4822 130 41601	BYV95A
481	4822 130 11522	UDZ15B
482	4822 130 11397	BAS316
483	4822 130 11528	1PS76SB10
483	4822 130 80622	BAT54
493	4822 130 11528	1PS76SB10
493	4822 130 80622	BAT54
505	4822 130 34281	BZX79-B15
506	4822 130 80622	BAT54
509	4822 130 11397	BAS316
510	4822 130 61219	BZX79-B10
511	4822 130 11397	BAS316
512	4822 130 11397	BAS316
514	5322 130 31932	BZT03-C200
515	4822 130 33657	BZV85-C6V8
516	4822 130 11397	BAS316
517	4822 130 11528	1PS76SB10
517	4822 130 80622	BAT54
525▲	3198 010 10640	Bridge cell GBU4K
530	4822 130 41487	BYV95C
534	9322 165 72687	DTV1500MFP
535	4822 130 11572	STPS8H100F
536	4822 130 11572	STPS8H100F
537	4822 130 11397	BAS316
614	4822 130 11528	1PS76SB10
615	4822 130 11397	BAS316
616	4822 130 11397	BAS316
617	4822 130 11397	BAS316
618	4822 130 11397	BAS316
619	4822 130 41601	BYV95A
620	5322 130 31938	BYV27-200
621	4822 130 41601	BYV95A
622	5322 130 32296	BZV85-C10
622	5322 130 33635	BZV85-C8V2
623	4822 130 11397	BAS316
624	4822 130 11397	BAS316
625	4822 130 11397	BAS316
626	4822 130 11397	BAS316
627	4822 130 11397	BAS316
701	4822 130 11397	BAS316
745	4822 130 11551	UDZS10B
950	4822 130 11416	PDZ6.8B
951	4822 130 11416	PDZ6.8B
953	4822 130 11416	PDZ6.8B
954	4822 130 11416	PDZ6.8B
955	4822 130 11416	PDZ6.8B
956	4822 130 11416	PDZ6.8B
957	4822 130 11416	PDZ6.8B
958	4822 130 11416	PDZ6.8B
959	4822 130 11416	PDZ6.8B
960	9340 548 61115	PDZ12B
961	4822 130 11416	PDZ6.8B
962	4822 130 11416	PDZ6.8B

100▲	4822 130 44568	BC557B
101▲	4822 130 40981	BC337-25
102	4822 130 11417	STP3NB60FP
103	9322 149 04682	TCET1102
130	5322 130 60159	BC846B
131	4822 130 11336	STP16NE06FP
132	5322 130 60159	BC846B
133	4822 130 60373	BC856B
140	5322 130 60159	BC846B
141	4822 130 11336	STP16NE06FP
210	5322 130 60159	BC846B
211	4822 130 42804	BC817-25
408▲	5322 130 44647	BC368
409	5322 130 60159	BC846B
421▲	9340 210 30127	BU2520DX
440	4822 209 70672	LM358N SEL.
441	4822 130 60373	BC856B
442	4822 130 60373	BC856B
443	5322 130 60159	BC846B
445	5322 130 60159	BC846B
450	5322 209 61472	LM393M
450	5322 209 70225	LM393D
455	4822 209 73852	PMBT2369
480	4822 130 11417	STP3NB60FP
482	4822 130 11418	TCDT1102G
486	5322 130 60159	BC846B
487	5322 130 60159	BC846B
501	5322 130 60159	BC846B
502▲	4822 130 40959	BC547B
504	9322 126 65687	STP5NB60FP
7504	9322 194 28687	STP5NK40ZFP
7506▲	4822 209 14933	TL431IZ
7507▲	9322 149 04682	TCET1102
7528▲	4822 130 40981	BC337-25
7529	4822 130 44461	BC546B
7530	5322 130 60159	BC846B
7611	5322 130 60159	BC846B
7612	5322 130 60159	BC846B
7613▲	4822 209 14933	TL431IZ
7613	4822 209 81397	TL431CLPST
7614	5322 130 60159	BC846B
7620▲	4822 209 90009	TDA8177
7641	5322 130 60159	BC846B
7653	5322 130 60159	BC846B
7654	4822 130 60373	BC856B
7680▲	4822 209 60956	TDA7052/N2
7681	5322 130 60159	BC846B
7682▲	5322 130 44647	BC368
7700	9322 163 86682	TDA7490L
7701	5322 130 60159	BC846B
7703	5322 130 60159	BC846B
7704	5322 130 60159	BC846B
7705	5322 130 60159	BC846B
7706	4822 130 60373	BC856B
7707	5322 130 60159	BC846B
7902	5322 130 60159	BC846B
7908	5322 130 60159	BC846B
7910	9322 166 03682	LD1085V36
7911▲	4822 209 72042	L78L05ACZ

Small Signal Panel [B]

Various

0072	3104 301 24191	Frame SSB A-side
0073	3104 301 24211	Cover SSB A-side
0074	3104 301 24221	Cover SSB Z-side
0075	3104 301 24201	Frame SSB Z-side
1001	2422 543 89022	Xtal 6MHz 20p
1301	2422 540 98456	Resonator 12MHz
1305	2422 543 01184	Xtal 4.433619MHz 20p
1308	2422 543 01183	Xtal 3.579545MHz 16p
1402	2422 025 16966	Connector 5p m SMD
1403▲	2422 086 11092	Fuse 500mA 50V F SMD
1407	2422 549 44324	Filt. 5.5/5.74MHz
1408	2422 549 44372	SAW 38.9MHz K3953L
1409	2422 549 44369	SAW 38.9MHz K9656L
1651	2422 543 89019	Xtal 18.432MHz 12p
1680	2422 025 16961	Connector 6p m SMD
1702	2422 540 98456	Resonator 12MHz
8402▲	3104 311 06411	Cable assy + ferr.
8680▲	3104 311 06421	Cable assy + ferr.

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2001	2222 867 15339	33pF 5% 50V 0603
2002	4822 126 11669	27pF 5% 50V 0603
2003	4822 126 13879	220nF +80-20% 16V
2004	4822 126 13879	220nF +80-20% 16V
2005	2238 586 59812	100nF 20% 50V 0603
2006	2238 586 59812	100nF 20% 50V 0603
2007	2238 586 59812	100nF 20% 50V 0603
2008	2238 586 59812	100nF 20% 50V 0603
2010	4822 126 11785	47pF 5% 50V 0603
2011	4822 126 11785	47pF 5% 50V 0603
2012	4822 126 11785	47pF 5% 50V 0603
2013	4822 124 12095	100µF 20% 16V
2016	4822 124 12095	100µF 20% 16V
2017	2238 586 59812	100nF 20% 50V 0603
2019	2238 586 59812	100nF 20% 50V 0603
2020	4822 126 13883	220pF 5% 50V
2022	2238 586 59812	100nF 20% 50V 0603
2023	2238 586 59812	100nF 20% 50V 0603
2024	2238 586 59812	100nF 20% 50V 0603
2025	2238 586 59812	100nF 20% 50V 0603
2026	2238 586 59812	100nF 20% 50V 0603
2027	2238 586 59812	100nF 20% 50V 0603
2028	2238 586 59812	100nF 20% 50V 0603
2029	2238 586 59812	100nF 20% 50V 0603
2031	2238 586 59812	100nF 20% 50V 0603
2033	4822 126 14226	82pF 5% 50V 0603
2034	4822 126 14226	82pF 5% 50V 0603
2035	4822 126 14226	82pF 5% 50V 0603
2036	4822 126 14226	82pF 5% 50V 0603
2037	4822 126 14226	82pF 5% 50V 0603
2038	2238 586 59812	100nF 20% 50V 0603
2039	2238 586 59812	100nF 20% 50V 0603
2040	2238 586 59812	100nF 20% 50V 0603
2303	2022 552 05679	1µF 10% 16V 0805
2304	4822 122 33741	10pF 10% 50V
2305	2238 586 59812	100nF 20% 50V 0603
2306	4822 126 13881	470pF 5% 50V
2307	2238 586 59812	100nF 20% 50V 0603
2308	4822 122 33741	10pF 10% 50V
2312	2020 552 96659	33µF 5% 50V 1206 NP0
2313	2020 552 96685	100nF 5% 25V 1206
2314	4822 124 12095	100µF 20% 16V
2315	2238 586 59812	100nF 20% 50V 0603
2316	2238 586 59812	100nF 20% 50V 0603
2317	2022 552 05679	1µF 10% 16V 0805
2318	2238 916 15641	22nF 10% 25V 0603
2319	4822 126 14247	1.5nF 50V 0603
2320	4822 122 33741	10pF 10% 50V
2321	2238 586 59812	100nF 20% 50V 0603
2322	2238 586 59812	100nF 20% 50V 0603
2323	2238 586 59812	100nF 20% 50V 0603
2324	5322 126 11583	10nF 10% 50V 0603
2325	2238 586 59812	100nF 20% 50V 0603
2326	5322 126 11583	10nF 10% 50V 0603
2327	4822 051 30759	75Ω 5% 0.062W
2328	4822 122 33761	22pF 5% 50V
2329	2238 586 59812	100nF 20% 50V 0603
2330	2238 586 59812	100nF 20% 50V 0603
2331	2238 586 59812	100nF 20% 50V 0603
2332	2238 586 59812	100nF 20% 50V 0603
2333	4822 126 14491	2.2µF 10V 0805
2334	4822 126 14491	2.2µF 10V 0805
2335	2238 586 59812	100nF 20% 50V 0603
2336	4822 126 14491	2.2µF 10V 0805
2337	2238 586 59812	100nF 20% 50V 0603
2338	2238 586 59812	100nF 20% 50V 0603
2340	4822 124 12095	100µF 20% 16V
2350	2238 586 59812	100nF 20% 50V 0603
2351	2238 586 59812	100nF 20% 50V 0603
2352	2238 586 59812	100nF 20% 50V 0603
2355	4822 051 30759	75Ω 5% 0.062W
2356	2238 586 59812	100nF 20% 50V 0603
2357	2238 586 59812	100nF 20% 50V 0603
2358	5322 126 11579	3.3nF 10% 63V
2359	4822 122 33752	15pF 5% 50V
2360	3198 016 31280	1.2pF 0.25pF 50V 0603
2361	3198 016 31280	1.2pF 0.25pF 50V 0603
2362	4822 126 11663	12pF 5% 50V 0603
2363	4822 126 13881	470pF 5% 50V
2364	4822 051 30759	75Ω 5% 0.062W
2365	2238 586 59812	100nF 20% 50V 0603
2366	2238 586 59812	100nF 20% 50V 0603
2367	2238 586 59812	100nF 20% 50V 0603
2368	2238 586 59812	100nF 20% 50V 0603
2369	2238 586 59812	100nF 20% 50V 0603
2370	2238 586 59812	100nF 20% 50V 0603
2371	4822 126 13193	4.7nF 10% 63V
2372	4822 126 14043	1µF +80-20% 16V 0805
2373	2238 586 59812	100nF 20% 50V 0603
2374	4822 126 14491	2.2µF 10V 0805
2375	2238 916 15641	22nF 10% 25V 0603
2376	2238 586 59812	100nF 20% 50V 0603
2377	4822 124 12095	100µF 20% 16V
2378	2238 586 59812	100nF 20% 50V 0603
2383	4822 051 30759	75Ω 5% 0.062W
2384	2238 586 59812	100nF 20% 50V 0603
2386	4822 126 13883	220pF 5% 50V
2390	2238 586 59812	100nF 20% 50V 0603
2391	2238 586 59812	100nF 20% 50V 0603
2392	4822 126 13193	4.7nF 10% 63V
2394	4822 126 14491	2.2µF 10V 0805
2404	2022 552 05679	1µF 10% 16V 0805
2405	4822 126 13193	4.7nF 10% 63V
2406	4822 126 13883	220pF 5% 50V
2407	4822 126 14221	68pF 5% 50V 0603 NP0
2408	3198 016 32780	2.7pF 10% 50V 0603
2409	4822 126 14491	2.2µF 10V 0805
2411	2238 586 59812	100nF 20% 50V 0603
2412	4822 126 13193	4.7nF 10% 63V
2417	3198 017 44740	470nF 10V 0603
2418	4822 126 13956	6.8pF 5% 63V 0603
2420	4822 122 33753	150pF 5% 50V NP0
2425	4822 124 12095	100µF 20% 16V
2431	2238 586 59812	100nF 20% 50V 0603
2501	4822 126 11785	47pF 5% 50V 0603
2502	4822 126 14107	330nF +-80/-20% 25V
2503	4822 126 14107	330nF +-80/-20% 25V
2504	4822 126 14107	330nF +-80/-20% 25V
2505	4822 126 14107	330nF +-80/-20% 25V
2506	4822 126 14107	330nF +-80/-20% 25V
2507	4822 126 14107	330nF +-80/-20% 25V
2508	4822 124 12095	100µF 20% 16V
2510	2022 552 05679	1µF 10% 16V 0805
2511	2022 552 05679	1µF 10% 16V 0805
2512	4822 126 13879	220nF +80-20% 16V
2513	4822 124 12084	1µF 20% 50V
2515	2020 552 94427	100pF 5% 50V
2516	2020 552 96221	10µF 20% 6.3V 0805
2520	2238 586 59812	100nF 20% 50V 0603
2521	2238 586 59812	100nF 20% 50V 0603

2522	4822 126 13881	470pF 5% 50V
2523	3198 016 31020	1nF 25V 0603
2524	2238 586 59812	100nF 20% 50V 0603
2525	4822 126 13881	470pF 5% 50V
2526	3198 016 31020	1nF 25V 0603
2528	4822 126 14585	100nF 10% 0805 50V
2529	4822 126 14472	1μF 10% 10V 0805
2530	4822 126 14472	1μF 10% 10V 0805
2546	4822 124 23002	10μF 16V
2547	4822 124 23002	10μF 16V
2548	4822 124 23002	10μF 16V
2549	4822 124 23002	10μF 16V
2550	2020 552 94427	100pF 5% 50V
2552	4822 126 13881	470pF 5% 50V
2553	4822 126 13881	470pF 5% 50V
2554	4822 126 13881	470pF 5% 50V
2555	4822 126 13881	470pF 5% 50V
2562	3198 016 31020	1nF 25V 0603
2563	3198 016 31020	1nF 25V 0603
2564	3198 016 31020	1nF 25V 0603
2565	3198 016 31020	1nF 25V 0603
2566	3198 016 31020	1nF 25V 0603
2567	3198 016 31020	1nF 25V 0603
2568	3198 016 31020	1nF 25V 0603
2569	3198 016 31020	1nF 25V 0603
2570	3198 016 31020	1nF 25V 0603
2571	4822 051 30759	75Ω 5% 0.062W
2574	3198 016 31020	1nF 25V 0603
2575	3198 016 31020	1nF 25V 0603
2576	3198 016 31020	1nF 25V 0603
2577	3198 016 31020	1nF 25V 0603
2578	2020 552 94427	100pF 5% 50V
2579	2020 552 94427	100pF 5% 50V
2580	3198 016 31020	1nF 25V 0603
2581	3198 016 31020	1nF 25V 0603
2582	3198 016 31020	1nF 25V 0603
2583	3198 016 31020	1nF 25V 0603
2593	3198 016 31020	1nF 25V 0603
2594	3198 016 31020	1nF 25V 0603
2595	3198 016 31020	1nF 25V 0603
2609	3198 016 31020	1nF 25V 0603
2610	4822 126 14238	2.2nF 50V 0603
2611	3198 016 31020	1nF 25V 0603
2634	3198 016 31020	1nF 25V 0603
2640	4822 126 13879	220nF +80-20% 16V
2643	4822 126 14107	330nF +-80/-20% 25V
2644	3198 016 31020	1nF 25V 0603
2645	4822 126 14107	330nF +-80/-20% 25V
2646	4822 126 14491	2.2μF 10V 0805
2649	4822 126 14491	2.2μF 10V 0805
2651	2238 586 59812	100nF 20% 50V 0603
2652	4822 126 11785	47pF 5% 50V 0603
2653	4822 126 14107	330nF +-80/-20% 25V
2654	4822 126 13881	470pF 5% 50V
2659	4822 126 13881	470pF 5% 50V
2660	4822 126 13881	470pF 5% 50V
2661	4822 126 14107	330nF +-80/-20% 25V
2662	4822 126 14107	330nF +-80/-20% 25V
2663	4822 126 13881	470pF 5% 50V
2664	4822 126 13881	470pF 5% 50V
2665	4822 124 12095	100μF 20% 16V
2666	4822 124 12095	100μF 20% 16V
2667	3198 016 33380	3.3pF 50V 0603
2668	3198 016 33380	3.3pF 50V 0603
2670	2238 586 59812	100nF 20% 50V 0603
2673	3198 016 31020	1nF 25V 0603
2674	3198 016 31020	1nF 25V 0603
2677	4822 124 23002	10μF 16V
2678	4822 124 23002	10μF 16V
2679	2238 586 59812	100nF 20% 50V 0603
2680	4822 124 23002	10μF 16V
2681	2238 586 59812	100nF 20% 50V 0603
2682	4822 124 23002	10μF 16V
2686	3198 016 31020	1nF 25V 0603
2687	3198 016 31020	1nF 25V 0603
2690	2238 586 59812	100nF 20% 50V 0603
2693	4822 126 13883	220pF 5% 50V
2694	3198 016 31020	1nF 25V 0603
2695	4822 124 12095	100μF 20% 16V
2701	4822 126 13956	6.8pF 5% 63V 0603
2704	4822 122 33752	15pF 5% 50V
2707	4822 126 11663	12pF 5% 50V 0603
2709	2238 586 59812	100nF 20% 50V 0603
2710	2238 586 59812	100nF 20% 50V 0603
2711	2238 586 59812	100nF 20% 50V 0603
2712	2238 586 59812	100nF 20% 50V 0603
2713	4822 122 33761	22pF 5% 50V
2714	4822 122 33761	22pF 5% 50V
2716	2238 586 59812	100nF 20% 50V 0603
2717	2238 586 59812	100nF 20% 50V 0603
2718	4822 122 33752	15pF 5% 50V
2719	4822 122 33752	15pF 5% 50V
2720	4822 122 33752	15pF 5% 50V
2721	2020 552 94427	100pF 5% 50V
2722	2020 552 94427	100pF 5% 50V
2723	4822 126 14225	56pF 5% 50V 0603
2724	2020 552 94427	100pF 5% 50V
2725	2238 586 59812	100nF 20% 50V 0603
2726	2238 586 59812	100nF 20% 50V 0603
2727	2238 586 59812	100nF 20% 50V 0603
2728	2020 021 91854	10μF 20% 16V
2729	2238 586 59812	100nF 20% 50V 0603
2730	2020 021 91557	100μF 20% 16V
2731	2238 586 59812	100nF 20% 50V 0603
2732	5322 126 11578	1nF 10% 50V 0603
2733	2238 586 59812	100nF 20% 50V 0603
2734	2238 586 59812	100nF 20% 50V 0603
2735	2238 586 59812	100nF 20% 50V 0603
2736	2238 586 59812	100nF 20% 50V 0603
2737	4822 126 11669	27pF 5% 50V 0603
2738	2238 586 59812	100nF 20% 50V 0603
2739	2020 021 91557	100μF 20% 16V
2740	2238 916 15641	22nF 10% 25V 0603
2741	2238 916 15641	22nF 10% 25V 0603
2742	2238 916 15641	22nF 10% 25V 0603
2743	2238 586 59812	100nF 20% 50V 0603
2744	2238 586 59812	100nF 20% 50V 0603
2745	2238 586 59812	100nF 20% 50V 0603
2746	2238 586 59812	100nF 20% 50V 0603
2747	4822 126 14221	68pF 5% 50V 0603 NP0
2748	2238 586 59812	100nF 20% 50V 0603
2749	2238 586 59812	100nF 20% 50V 0603
2750	2238 586 59812	100nF 20% 50V 0603
2751	2238 586 59812	100nF 20% 50V 0603
2752	2238 586 59812	100nF 20% 50V 0603
2753	2238 586 59812	100nF 20% 50V 0603
2754	5322 126 11578	1nF 10% 50V 0603
2755	2238 586 59812	100nF 20% 50V 0603
2756	2238 586 59812	100nF 20% 50V 0603
2757	2238 916 15641	22nF 10% 25V 0603
2758	2020 021 91854	10μF 20% 16V
2759	2238 586 59812	100nF 20% 50V 0603
2760	2238 586 59812	100nF 20% 50V 0603
2761	2238 586 59812	100nF 20% 50V 0603
2762	2238 586 59812	100nF 20% 50V 0603
2763	2238 586 59812	100nF 20% 50V 0603
2764	2238 586 59812	100nF 20% 50V 0603
2766	4822 122 33752	15pF 5% 50V
2767	4822 122 33752	15pF 5% 50V
2768	2238 586 59812	100nF 20% 50V 0603
2769	2238 586 59812	100nF 20% 50V 0603
2770	2238 586 59812	100nF 20% 50V 0603
2771	2238 586 59812	100nF 20% 50V 0603
2772	2238 586 59812	100nF 20% 50V 0603
2773	2238 586 59812	100nF 20% 50V 0603
2774	4822 126 11669	27pF 5% 50V 0603
2775	4822 126 11663	12pF 5% 50V 0603
2776	4822 126 11663	12pF 5% 50V 0603
2777	2238 586 59812	100nF 20% 50V 0603
2778	2238 586 59812	100nF 20% 50V 0603
2779	4822 126 11663	12pF 5% 50V 0603
2780	2238 586 59812	100nF 20% 50V 0603
2781	2238 586 59812	100nF 20% 50V 0603
2782	2238 586 59812	100nF 20% 50V 0603
2783	2238 586 59812	100nF 20% 50V 0603
2784	2238 586 59812	100nF 20% 50V 0603
2785	2238 586 59812	100nF 20% 50V 0603
2788	2238 586 59812	100nF 20% 50V 0603
2789	2238 586 59812	100nF 20% 50V 0603
2790	2238 586 59812	100nF 20% 50V 0603
2791	2238 586 59812	100nF 20% 50V 0603
2792	2238 586 59812	100nF 20% 50V 0603
2793	2238 586 59812	100nF 20% 50V 0603
2794	2238 586 59812	100nF 20% 50V 0603
2795	2238 586 59812	100nF 20% 50V 0603
2796	2238 586 59812	100nF 20% 50V 0603
2797	2238 586 59812	100nF 20% 50V 0603
2798	2238 586 59812	100nF 20% 50V 0603
2799	2238 586 59812	100nF 20% 50V 0603
2800	2238 586 59812	100nF 20% 50V 0603
2801	4822 126 11663	12pF 5% 50V 0603
2802	2238 586 59812	100nF 20% 50V 0603
2803	2238 586 59812	100nF 20% 50V 0603
2804	2238 586 59812	100nF 20% 50V 0603
2805	2238 586 59812	100nF 20% 50V 0603
2806	2238 586 59812	100nF 20% 50V 0603
2807	2238 586 59812	100nF 20% 50V 0603
2808	2238 586 59812	100nF 20% 50V 0603
2809	2238 586 59812	100nF 20% 50V 0603
2810	2238 586 59812	100nF 20% 50V 0603
2811	2238 586 59812	100nF 20% 50V 0603
2812	2238 586 59812	100nF 20% 50V 0603
2813	2238 586 59812	100nF 20% 50V 0603
2814	2238 586 59812	100nF 20% 50V 0603
2815	4822 126 14223	2.2pF 10% 50V 0603
2816	4822 126 14223	2.2pF 10% 50V 0603
2817	2238 586 59812	100nF 20% 50V 0603
2818	4822 126 14223	2.2pF 10% 50V 0603
2819	2238 586 59812	100nF 20% 50V 0603
2820	2238 586 59812	100nF 20% 50V 0603
2821	2238 586 59812	100nF 20% 50V 0603
2822	2238 586 59812	100nF 20% 50V 0603
2823	2238 586 59812	100nF 20% 50V 0603
2824	2238 586 59812	100nF 20% 50V 0603
2825	2238 586 59812	100nF 20% 50V 0603
2826	2238 586 59812	100nF 20% 50V 0603
2827	2238 586 59812	100nF 20% 50V 0603
2828	2020 021 91854	10μF 20% 16V
2829	2020 021 91557	100μF 20% 16V
2830	2238 586 59812	100nF 20% 50V 0603
2831	2238 586 59812	100nF 20% 50V 0603
2832	2238 586 59812	100nF 20% 50V 0603
2833	2238 586 59812	100nF 20% 50V 0603
2834	2238 586 59812	100nF 20% 50V 0603
2835	2238 586 59812	100nF 20% 50V 0603
2836	2238 586 59812	100nF 20% 50V 0603
2837	2020 021 91557	100μF 20% 16V
2838	4822 126 11669	27pF 5% 50V 0603
2841	2238 586 59812	100nF 20% 50V 0603
2842	4822 126 11669	27pF 5% 50V 0603
2844	2238 586 59812	100nF 20% 50V 0603
2845	2238 586 59812	100nF 20% 50V 0603
2846	2238 586 59812	100nF 20% 50V 0603
2847	2020 021 91854	10μF 20% 16V
2848	2238 586 59812	100nF 20% 50V 0603
2849	2238 586 59812	100nF 20% 50V 0603
2850	2238 586 59812	100nF 20% 50V 0603
2851	2238 586 59812	100nF 20% 50V 0603
2852	2238 586 59812	100nF 20% 50V 0603
2853	2238 586 59812	100nF 20% 50V 0603
2854	2238 586 59812	100nF 20% 50V 0603
2855	2238 586 59812	100nF 20% 50V 0603
2856	2238 586 59812	100nF 20% 50V 0603
2857	2238 586 59812	100nF 20% 50V 0603
2858	2238 586 59812	100nF 20% 50V 0603
2859	2238 586 59812	100nF 20% 50V 0603
2860	2238 586 59812	100nF 20% 50V 0603
2861	2238 586 59812	100nF 20% 50V 0603
2862	2238 586 59812	100nF 20% 50V 0603
2863	2238 586 59812	100nF 20% 50V 0603
2864	2238 586 59812	100nF 20% 50V 0603
2865	2238 586 59812	100nF 20% 50V 0603
2866	2238 586 59812	100nF 20% 50V 0603
2867	2238 586 59812	100nF 20% 50V 0603
2868	2238 586 59812	100nF 20% 50V 0603
2869	2238 586 59812	100nF 20% 50V 0603
2870	2238 586 59812	100nF 20% 50V 0603
2871	2020 021 91557	100μF 20% 16V
2872	2238 586 59812	100nF 20% 50V 0603
2873	2238 586 59812	100nF 20% 50V 0603
2874	2238 586 59812	100nF 20% 50V 0603
2875	2238 586 59812	100nF 20% 50V 0603
2876	2238 586 59812	100nF 20% 50V 0603
2877	2238 586 59812	100nF 20% 50V 0603
2878	2238 586 59812	100nF 20% 50V 0603
2879	2238 586 59812	100nF 20% 50V 0603
2880	2238 586 59812	100nF 20% 50V 0603
2881	2238 586 59812	100nF 20% 50V 0603
2882	2238 586 59812	100nF 20% 50V 0603
2883	2238 586 59812	100nF 20% 50V 0603
2884	2238 586 59812	100nF 20% 50V 0603
2885	2238 586 59812	100nF 20% 50V 0603
2886	2238 586 59812	100nF 20% 50V 0603
2887	2238 586 59812	100nF 20% 50V 0603
2888	2238 586 59812	100nF 20% 50V 0603
2889	2020 021 91557	100μF 20% 16V
2890	2238 586 59812	100nF 20% 50V 0603
2891	2238 586 59812	100nF 20% 50V 0603
2892	2238 586 59812	100nF 20% 50V 0603
2893	2238 586 59812	100nF 20% 50V 0603
2894	2238 586 59812	100nF 20% 50V 0603
2895	2020 021 91854	10μF 20% 16V
2896	2020 021 91557	100μF 20% 16V
2898	2020 021 91854	10μF 20% 16V
2899	2238 586 59812	100nF 20% 50V 0603
2908	2238 586 59812	100nF 20% 50V 0603
2909	2238 586 59812	100nF 20% 50V 0603
2910	2238 586 59812	100nF 20% 50V 0603
2911	2238 586 59812	100nF 20% 50V 0603
2912	3198 017 44740	470nF 10V 0603
2917	2238 586 59812	100nF 20% 50V 0603
2918	4822 126 13879	220nF +80-20% 16V
2919	2020 021 91557	100μF 20% 16V
2920	2238 586 59812	100nF 20% 50V 0603
2921	2238 586 59812	100nF 20% 50V 0603
2924	2238 586 59812	100nF 20% 50V 0603
2925	2020 552 96618	1nF 10% 50V 0402
2930	4822 117 13605	Jumper 0402
2932	4822 117 13605	Jumper 0402
2933	4822 117 13605	Jumper 0402

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3001	4822 051 30472	4.7Ω 5% 0.062W
3002	4822 051 30472	4.7Ω 5% 0.062W
3003	4822 117 13525	24kΩ 1% 0.62W 0603
3005	4822 051 30103	10kΩ 5% 0.062W
3006	4822 051 30471	47Ω 5% 0.062W
3007	3198 031 14710	4 x 470Ω 5% 1206
3008	4822 117 13526	150Ω 5% 0.63W
3009	2322 702 60829	82Ω 5% 0603
3011	4822 051 30471	47Ω 5% 0.062W
3012	3198 031 11010	4 x 100Ω 5% 1206
3013	4822 051 30103	10kΩ 5% 0.062W
3014	4822 051 30682	6.8Ω 5% 0.062W
3015	4822 051 30474	470kΩ 5% 0.062W
3016	4822 051 30152	1.5Ω 5% 0.062W
3017	4822 051 30472	4.7Ω 5% 0.062W
3018	4822 051 30103	10kΩ 5% 0.062W
3019	4822 051 30472	4.7Ω 5% 0.062W
3020	4822 051 30103	10kΩ 5% 0.062W
3021	4822 051 30103	10kΩ 5% 0.062W
3024	4822 051 30273	27kΩ 5% 0.062W
3025	4822 051 30221	220Ω 5% 0.062W
3026	4822 051 30472	4.7Ω 5% 0.062W
3027	4822 117 12925	47kΩ 1% 0.063W 0603
3029	4822 051 30103	10kΩ 5% 0.062W
3031	4822 051 30103	10kΩ 5% 0.062W
3033	4822 051 30103	10kΩ 5% 0.062W
3034	3198 031 11010	4 x 100Ω 5% 1206
3035	3198 031 11010	4 x 100Ω 5% 1206
3039	4822 051 30181	180Ω 5% 0.062W
3040	4822 051 30472	4.7Ω 5% 0.062W
3042	4822 051 30472	4.7Ω 5% 0.062W
3044	4822 051 30272	2.7kΩ 5% 0.062W
3048	3198 031 11010	4 x 100Ω 5% 1206
3049	3198 031 11010	4 x 100Ω 5% 1206
3050	3198 031 11010	4 x 100Ω 5% 1206
3051	3198 031 11010	4 x 100Ω 5% 1206
3052	3198 031 11010	4 x 100Ω 5% 1206
3053	4822 051 30101	100Ω 5% 0.062W
3054	3198 031 11010	4 x 100Ω 5% 1206
3055	3198 031 11010	4 x 100Ω 5% 1206
3056	3198 031 11010	4 x 100Ω 5% 1206
3057	3198 031 11010	4 x 100Ω 5% 1206
3059	2322 704 66201	620Ω 1% 0603
3061	4822 051 30103	10kΩ 5% 0.062W
3062	4822 051 30103	10kΩ 5% 0.062W
3064	3198 031 11010	4 x 100Ω 5% 1206
3065	4822 051 30472	4.7Ω 5% 0.062W
3066	4822 117 12925	47kΩ 1% 0.063W 0603
3067	4822 051 30474	470kΩ 5% 0.062W
3068	4822 051 30272	2.7kΩ 5% 0.062W
3069	4822 051 30272	2.7kΩ 5% 0.062W
3073	3198 031 14710	4 x 470Ω 5% 1206
3074	3198 031 14710	4 x 470Ω 5% 1206
3076	3198 031 14710	4 x 470Ω 5% 1206
3078	3198 031 14710	4 x 470Ω 5% 1206
3079	4822 051 30472	4.7Ω 5% 0.062W
3080	4822 051 30472	4.7Ω 5% 0.062W
3081	4822 051 30008	Jumper 0603
3088	4822 051 30472	4.7Ω 5% 0.062W
3090	3198 031 14710	4 x 470Ω 5% 1206
3093	4822 051 30103	10kΩ 5% 0.062W
3094	4822 117 12925	47kΩ 1% 0.063W 0603
3095	4822 117 12925	47kΩ 1% 0.063W 0603
3096	4822 117 12925	47kΩ 1% 0.063W 0603
3097	4822 051 30008	Jumper 0603
3099	3198 031 14710	4 x 470Ω 5% 1206
3302	4822 051 30102	1kΩ 5% 0.062W
3304▲	2322 750 63908	3.9Ω 5% Fuse 1206
3306	4822 051 30221	220Ω 5% 0.062W
3307	4822 051 30183	18kΩ 5% 0.062W
3308	4822 051 20154	150kΩ 5% 0.1W
3310	4822 051 30563	56kΩ 5% 0.062W
3311	4822 117 13632	100kΩ 1% 0603 0.62W
3312	4822 117 13632	100kΩ 1% 0603 0.62W
3313	4822 117 13632	100kΩ 1% 0603 0.62W
3314	4822 051 30103	10kΩ 5% 0.062W
3315	4822 051 30102	1kΩ 5% 0.062W
3316	4822 117 10834	47kΩ 1% 0.1W
3317	4822 051 30221	220Ω 5% 0.062W
3318	4822 051 30102	1kΩ 5% 0.062W
3319	4822 051 30221	220Ω 5% 0.062W
3320	4822 051 30101	100Ω 5% 0.062W
3321	4822 051 30101	100Ω 5% 0.062W
3322	4822 051 10102	1kΩ 2% 0.25W
3324	4822 051 30472	4.7Ω 5% 0.062W
3327	4822 117 13632	100kΩ 1% 0603 0.62W
3328	4822 051 30393	39kΩ 5% 0.062W
3329▲	4822 117 13568	6.8Ω 5% 1206
3331	4822 051 30102	1kΩ 5% 0.062W
3333	4822 051 30102	1kΩ 5% 0.062W
3334	4822 051 30102	1kΩ 5% 0.062W
3336	4822 051 30102	1kΩ 5% 0.062W
3337	4822 051 30681	680Ω 5% 0.062W
3338	4822 051 30479	47Ω 5% 0.062W
3340	4822 051 30101	100Ω 5% 0.062W
3341	4822 051 30101	100Ω 5% 0.062W
3342	4822 051 30101	100Ω 5% 0.062W
3343	4822 051 20683	68kΩ 5% 0.1W
3344	4822 051 30222	2.2kΩ 5% 0.062W
3345	4822 051 30103	10kΩ 5% 0.062W
3346	4822 051 30333	33kΩ 5% 0.062W
3347	4822 051 30223	22kΩ 5% 0.062W
3348	4822 051 30222	2.2kΩ 5% 0.062W
3349	4822 051 30472	4.7Ω 5% 0.062W
3356	4822 051 30681	680Ω 5% 0.062W
3357	4822 051 30479	47Ω 5% 0.062W
3362	4822 051 30684	680kΩ 5% 0.062W
3363	4822 051 30102	1kΩ 5% 0.062W
3364	4822 051 30103	10kΩ 5% 0.062W
3365	4822 051 30103	10kΩ 5% 0.062W
3366	4822 051 30221	220Ω 5% 0.062W
3367	4822 051 30221	220Ω 5% 0.062W
3368	3198 021 32250	2.2MΩ 5% 0603
3370	4822 051 30101	100Ω 5% 0.062W
3371	4822 051 30479	47Ω 5% 0.062W
3372	4822 051 30471	47Ω 5% 0.062W
3373	4822 051 30008	Jumper 0603
3374	4822 051 30008	Jumper 0603
3375	4822 051 30008	Jumper 0603
3376	4822 051 30101	100Ω 5% 0.062W
3377	4822 051 30101	100Ω 5% 0.062W
3378	4822 051 30153	15kΩ 5% 0.062W
3379	4822 051 30008	Jumper 0603
3380	4822 051 30101	100Ω 5% 0.062W
3382	4822 051 30561	560Ω 5% 0.062W
3383	4822 051 30681	680Ω 5% 0.062W
3384	4822 051 30479	47Ω 5% 0.062W
3385	4822 051 30471	47Ω 5% 0.062W
3386	4822 051 30223	22kΩ 5% 0.062W
3390	4822 051 30221	220Ω 5% 0.062W
3391	4822 051 30472	4.7Ω 5% 0.062W
3393	4822 117 13632	100kΩ 1% 0603 0.62W
3394	4822 051 30472	4.7Ω 5% 0.062W
3400▲	4822 117 11152	4.7Ω 5%
3402▲	2322 750 63908	3.9Ω 5% Fuse 1206
3403	4822 051 30101	100Ω 5% 0.062W
3404	4822 051 30561	560Ω 5% 0.062W
3405	4822 051 30102	1kΩ 5% 0.062W
3406	2322 702 60279	27Ω 5% 0.1W 0603
3408	4822 051 30101	100Ω 5% 0.062W
3411	4822 051 30272	2.7kΩ 5% 0.062W
3412	4822 051 30102	1kΩ 5% 0.062W
3413	4822 051 30271	270Ω 5% 0.062W
3414	4822 051 30472	4.7Ω 5% 0.062W
3415	4822 051 30222	2.2kΩ 5% 0.062W
3418	4822 051 30391	390Ω 5% 0.062W
3419	4822 051 30339	33Ω 5% 0.062W
3422	4822 051 30102	1kΩ 5% 0.062W
3435	4822 051 30472	4.7Ω 5% 0.062W
3436	4822 051 30221	220Ω 5% 0.062W
3437	4822 051 30471	47Ω 5% 0.062W
3439	4822 051 30471	47Ω 5% 0.062W
3441	4822 051 30562	5.6kΩ 5% 0.063W 0603
3445	4822 051 30271	270Ω 5% 0.062W
3446	4822 051 30101	100Ω 5% 0.062W
3463	4822 051 30472	4.7Ω 5% 0.062W
3472	4822 051 30223	22kΩ 5% 0.062W
3500	4822 051 30153	15kΩ 5% 0.062W
3501	2422 549 43769	Bead 30Ω 100MHz
3504	4822 051 30123	12kΩ 5% 0.1W
3505	4822 051 30153	15kΩ 5% 0.062W
3506	2422 549 43769	Bead 30Ω 100MHz
3509	4822 051 30123	12kΩ 5% 0.1W
3510	4822 117 12925	47kΩ 1% 0.063W 0603
3511	4822 117 13632	100kΩ 1% 0603 0.62W
3512	4822 051 30154	150kΩ 5% 0.062W
3513	4822 117 12889	270kΩ 1% 0.063W 0603
3514	4822 117 12925	47kΩ 1% 0.063W 0603
3515	4822 117 13632	100kΩ 1% 0603 0.62W
3516	4822 051 30392	3.9Ω 5% 0.063W 0603
3519	4822 051 30103	10kΩ 5% 0.062W
3521	4822 117 13632	100kΩ 1% 0603 0.62W
3522	4822 117 13632	100kΩ 1% 0603 0.62W
3523	4822 117 13632	100kΩ 1% 0603 0.62W
3524	4822 117 13632	100kΩ 1% 0603 0.62W
3525	4822 051 30684	680kΩ 5% 0.062W
3526	4822 051 30105	1MΩ 5% 0.062W
3527	4822 051 30101	100Ω 5% 0.062W
3529	4822 051 30103	10kΩ 5% 0.062W
3530	4822 051 30103	10kΩ 5% 0.062W
3531	5322 117 13056	8.2kΩ 1% 0.063W 0603
3532	4822 051 30102	1kΩ 5% 0.062W
3533	4822 051 30103	10kΩ 5% 0.062W
3540	4822 051 30103	10kΩ 5% 0.062W
3546	4822 051 30102	1kΩ 5% 0.062W
3552	4822 051 30103	10kΩ 5% 0.062W
3558	4822 051 30101	100Ω 5% 0.062W
3559	4822 051 30101	100Ω 5% 0.062W
3560	4822 051 30101	100Ω 5% 0.062W
3561	4822 051 30101	100Ω 5% 0.062W
3562	4822 051 30101	100Ω 5% 0.062W
3563	4822 051 30101	100Ω 5% 0.062W
3564	4822 051 30101	100Ω 5% 0.062W
3567	4822 051 30101	100Ω 5% 0.062W
3568	4822 051 30101	100Ω 5% 0.062W
3569	4822 051 30101	100Ω 5% 0.062W
3570	4822 051 30101	100Ω 5% 0.062W
3571	4822 051 30101	100Ω 5% 0.062W
3572	4822 051 30101	100Ω 5% 0.062W
3573	4822 051 30101	100Ω 5% 0.062W
3574	4822 051 30101	100Ω 5% 0.062W
3575	4822 051 30101	100Ω 5% 0.062W
3576	4822 051 30272	2.7kΩ 5% 0.062W
3578	4822 051 30103	10kΩ 5% 0.062W
3579	4822 051 30103	10kΩ 5% 0.062W
3612	4822 117 12925	47kΩ 1% 0.063W 0603
3613	4822 117 12925	47kΩ 1% 0.063W 0603
3614	4822 117 12925	47kΩ 1% 0.063W 0603
3615	4822 117 12925	47kΩ 1% 0.063W 0603
3616	4822 051 30272	2.7kΩ 5% 0.062W
3636	4822 051 30271	270Ω 5% 0.062W
3637	4822 117 12864	82kΩ 5% 0.6W
3640	4822 051 30101	100Ω 5% 0.062W
3641	4822 051 30101	100Ω 5% 0.062W
3642	4822 051 30101	100Ω 5% 0.062W
3643	4822 051 30101	100Ω 5% 0.062W
3644▲	4822 117 11152	4.7Ω 5%
3653	4822 051 30008	Jumper 0603
3654	4822 051 30008	Jumper 0603
3655	4822 051 30101	100Ω 5% 0.062W
3656	4822 051 30101	100Ω 5% 0.062W
3657	4822 051 30563	56kΩ 5% 0.062W
3658	4822 051 30154	150kΩ 5% 0.062W
3666	4822 051 30154	150kΩ 5% 0.062W
3667	4822 117 12864	82kΩ 5% 0.6W
3668	4822 051 30563	56kΩ 5% 0.062W
3669	4822 051 30271	270Ω 5% 0.062W
3670	4822 051 30102	1kΩ 5% 0.062W
3671	4822 117 11817	1.2kΩ 1% 0.0625W
3673	4822 051 30103	10kΩ 5% 0.062W
3683	4822 051 30223	22kΩ 5% 0.062W
3684	4822 051 30008	Jumper 0603
3685	4822 051 30008	Jumper 0603
3688	4822 051 30008	Jumper 0603
3689	4822 051 30008	Jumper 0603
3692	4822 051 30008	Jumper 0603
3693	4822 051 30008	Jumper 0603
3698	4822 117 11817	1.2kΩ 1% 0.0625W
3700	4822 117 12139	22Ω 5% 0.062W
3701	4822 051 30102	1kΩ 5% 0.062W
3702	4822 051 30109	10Ω 5% 0.062W
3703	5322 117 13062	390Ω 1% 0.063W 0603
3704	5322 117 13045	270Ω 1% 0.063W 0603
3705	5322 117 13045	270Ω 1% 0.063W 0603
3709	4822 051 30101	100Ω 5% 0.062W
3710	4822 051 30101	100Ω 5% 0.062W
3712	4822 117 12925	47kΩ 1% 0.063W 0603
3713	4822 051 30181	180Ω 5% 0.062W
3714	4822 051 30181	180Ω 5% 0.062W
3715	4822 051 30181	180Ω 5% 0.062W
3716	4822 117 13632	100kΩ 1% 0603 0.62W
3717	4822 117 13632	100kΩ 1% 0603 0.62W
3718	4822 117 13632	100kΩ 1% 0603 0.62W
3719	4822 051 30332	3.3Ω 5% 0.062W
3720	4822 051 30103	10kΩ 5% 0.062W
3721	4822 117 13605	Jumper 0402
3722	3198 031 04720	4.7kΩ 5% 0402
3724	4822 051 30101	100Ω 5% 0.062W
3725	4822 051 30332	3.3Ω 5% 0.062W
3726	4822 117 11817	1.2kΩ 1% 0.0625W
3727	2322 704 61501	150Ω 1% 0603
3728	2322 704 61501	150Ω 1% 0603
3729	4822 051 30689	68Ω 5% 0.063W 0603
3730	4822 051 30561	560Ω 5% 0.062W
3731	5322 117 13056	8.2kΩ 1% 0.063W 0603
3732	3198 031 04730	47Ω 5% 0402
3733	4822 051 30103	10kΩ 5% 0.062W
3735	4822 051 30332	3.3Ω 5% 0.062W
3736	4822 051 30101	100Ω 5% 0.062W
3737	4822 051 30102	1kΩ 5% 0.062W
3738	4822 051 30102	1kΩ 5% 0.062W
3739	4822 117 13525	24kΩ 1% 0.62W 0603
3740	3198 031 04720	4.7kΩ 5% 0402
3742	4822 117 13601	22kΩ 5% 0402
3743	4822 051 30103	10kΩ 5% 0.062W
3744	4822 051 30222	2.2kΩ 5% 0.062W
3745	4822 051 30102	1kΩ 5% 0.062W
3746	5322 117 13042	3.9kΩ 1% 0.063W 0603

3747	4822 117 12925	47kΩ 1% 0.063W 0603
3748	4822 051 30124	120kΩ 5% 0.062W
3749	5322 117 13042	3.9kΩ 1% 0.063W 0603
3750	3198 031 03920	3.9kΩ 5% 0402
3751	3198 031 03320	3.3kΩ 5% 0402
3752	4822 117 12917	1Ω 5% 0.062W
3753	4822 117 12917	1Ω 5% 0.062W
3754	4822 051 30101	100Ω 5% 0.062W
3755	3198 031 04720	4.7kΩ 5% 0402
3756	4822 051 30103	10kΩ 5% 0.062W
3757	2322 704 61501	150Ω 1% 0603
3758	3198 031 04720	4.7kΩ 5% 0402
3759	4822 051 30221	220Ω 5% 0.062W
3762	3198 031 06890	68Ω 5% 0402
3763	3198 031 06890	68Ω 5% 0402
3764	3198 031 06890	68Ω 5% 0402
3766	4822 051 30102	1kΩ 5% 0.062W
3767	3198 031 06890	68Ω 5% 0402
3768	3198 031 06890	68Ω 5% 0402
3769	3198 031 06890	68Ω 5% 0402
3770	3198 031 06890	68Ω 5% 0402
3771	4822 051 30759	75Ω 5% 0.062W
3772	4822 051 30759	75Ω 5% 0.062W
3773	4822 051 30759	75Ω 5% 0.062W
3774	3198 031 06890	68Ω 5% 0402
3775	3198 031 06890	68Ω 5% 0402
3776	4822 051 30759	75Ω 5% 0.062W
3777	3198 031 06890	68Ω 5% 0402
3778	3198 031 04720	4.7kΩ 5% 0402
3779	3198 031 06890	68Ω 5% 0402
3780	3198 031 06890	68Ω 5% 0402
3781	3198 031 06890	68Ω 5% 0402
3782	4822 051 30102	1kΩ 5% 0.062W
3784	3198 031 06890	68Ω 5% 0402
3785	4822 051 30331	330Ω 5% 0.062W
3786	4822 051 30331	330Ω 5% 0.062W
3787	4822 051 30331	330Ω 5% 0.062W
3788	5322 117 13034	1.5kΩ 1% 0.063W 0603
3789	4822 051 30008	Jumper 0603
3790	2322 704 65601	560Ω 1% 0.063W 0603
3791	5322 117 13049	470Ω 1% 0.063W 0603
3792	2322 704 61501	150Ω 1% 0603
3793	4822 051 30222	2.2kΩ 5% 0.062W
3794	4822 051 30759	75Ω 5% 0.062W
3795	2322 704 61501	150Ω 1% 0603
3797	3198 031 04720	4.7kΩ 5% 0402
3800	4822 051 30759	75Ω 5% 0.062W
3801	2322 704 61501	150Ω 1% 0603
3802	2322 704 61501	150Ω 1% 0603
3803	3198 031 06890	68Ω 5% 0402
3804	3198 031 06890	68Ω 5% 0402
3805	5322 117 13062	390Ω 1% 0.063W 0603
3806	5322 117 13062	390Ω 1% 0.063W 0603
3807	2322 704 61201	120Ω 1% 0.063W 0603
3808	5322 117 13051	680Ω 1% 0.063W 0603
3809	5322 117 13017	100Ω 1% 0.063W 0603
3810	5322 117 13062	390Ω 1% 0.063W 0603
3811	4822 051 30759	75Ω 5% 0.062W
3812	4822 051 30759	75Ω 5% 0.062W
3813	5322 117 13062	390Ω 1% 0.063W 0603
3814	4822 051 30759	75Ω 5% 0.062W
3815	4822 051 30759	75Ω 5% 0.062W
3816	5322 117 13062	390Ω 1% 0.063W 0603
3817	4822 051 30759	75Ω 5% 0.062W
3818	4822 051 30759	75Ω 5% 0.062W
3820	3198 031 04720	4.7kΩ 5% 0402
3822	2322 705 70279	27Ω 5% 0402
3823	3198 031 06890	68Ω 5% 0402
3824	3198 031 01090	10Ω 5% 0.01W 0402
3825	3198 031 01090	10Ω 5% 0.01W 0402
3826	4822 117 13605	Jumper 0402
3827	4822 117 13605	Jumper 0402
3830	3198 031 06890	68Ω 5% 0402
3831	3198 031 06890	68Ω 5% 0402
3832	3198 031 06890	68Ω 5% 0402
3833	3198 031 06890	68Ω 5% 0402
3834	3198 031 06890	68Ω 5% 0402
3835	3198 031 06890	68Ω 5% 0402
3836	3198 031 06890	68Ω 5% 0402
3837	3198 031 06890	68Ω 5% 0402
3838	3198 031 06890	68Ω 5% 0402
3839	3198 031 06890	68Ω 5% 0402
3840	3198 031 06890	68Ω 5% 0402
3841	3198 031 06890	68Ω 5% 0402
3842	3198 031 06890	68Ω 5% 0402
3843	3198 031 06890	68Ω 5% 0402
3844	3198 031 06890	68Ω 5% 0402
3845	3198 031 06890	68Ω 5% 0402
3846	4822 051 30472	4.7Ω 5% 0.062W
3850	2322 706 78209	82Ω 1% 0.1W 0402
3853	4822 117 12925	47kΩ 1% 0.063W 0603
3855	3198 031 04720	4.7kΩ 5% 0402
3877	4822 117 13605	Jumper 0402
3878	4822 117 13605	Jumper 0402
3880	4822 117 12925	47kΩ 1% 0.063W 0603
3881	4822 117 12925	47kΩ 1% 0.063W 0603
3882	4822 117 12925	47kΩ 1% 0.063W 0603
3883	4822 117 12925	47kΩ 1% 0.063W 0603
3884	4822 117 12925	47kΩ 1% 0.063W 0603
3885	4822 051 30102	1kΩ 5% 0.062W
3886	4822 051 30102	1kΩ 5% 0.062W
3887	4822 051 30102	1kΩ 5% 0.062W
3888	4822 051 30102	1kΩ 5% 0.062W
3889	4822 051 30102	1kΩ 5% 0.062W
3890	4822 051 30102	1kΩ 5% 0.062W
3891	4822 051 30102	1kΩ 5% 0.062W
3892	4822 117 13605	Jumper 0402
3894	2322 704 61501	150Ω 1% 0603
3900	3198 031 06890	68Ω 5% 0402
3901	3198 031 06890	68Ω 5% 0402
3902	3198 031 06890	68Ω 5% 0402
3903	4822 117 13632	100kΩ 1% 0603 0.62W
3904	4822 117 13525	24kΩ 1% 0.62W 0603
3905	3198 031 04720	4.7kΩ 5% 0402
3911	2350 033 11689	4x 68Ω 5% Netw.
3912	2350 033 11689	4x 68Ω 5% Netw.
3913	2350 033 11229	4x 22Ω 5% Netw.
3914	2350 033 11229	4x 22Ω 5% Netw.
3915	2350 033 11229	4x 22Ω 5% Netw.
3916	2350 033 11229	4x 22Ω 5% Netw.
3917	2350 033 11229	4x 22Ω 5% Netw.
3918	3198 031 06890	68Ω 5% 0402
3919	3198 031 06890	68Ω 5% 0402
3920	3198 031 06890	68Ω 5% 0402
3921	3198 031 06890	68Ω 5% 0402
9015	4822 051 30008	Jumper 0603
9302	4822 051 30008	Jumper 0603
9303	4822 051 30008	Jumper 0603
9304	4822 051 30008	Jumper 0603
9322	4822 051 30008	Jumper 0603
9410	4822 051 30008	Jumper 0603
9413	4822 051 30008	Jumper 0603
9416	4822 051 30008	Jumper 0603
9417	4822 051 30008	Jumper 0603
9418	4822 051 30008	Jumper 0603
9419	4822 051 30008	Jumper 0603
9420	4822 051 30008	Jumper 0603
9520	4822 051 30008	Jumper 0603
9522	4822 051 30008	Jumper 0603
9603	4822 051 30008	Jumper 0603
9604	4822 051 30008	Jumper 0603
9607	4822 051 30008	Jumper 0603
9608	4822 051 30008	Jumper 0603
9609	4822 051 30008	Jumper 0603
9610	4822 051 30008	Jumper 0603
9642	4822 051 30008	Jumper 0603
9645	4822 051 30008	Jumper 0603
9688	4822 051 30008	Jumper 0603
9689	4822 051 30008	Jumper 0603
9691	4822 051 30008	Jumper 0603
9692	4822 051 30008	Jumper 0603
9694	4822 051 30008	Jumper 0603
9702	4822 051 30008	Jumper 0603
9704	4822 117 13605	Jumper 0402
9706	4822 051 30008	Jumper 0603
9713	4822 117 13605	Jumper 0402
9714	4822 117 13605	Jumper 0402
9715	4822 117 13605	Jumper 0402
9722	4822 117 13605	Jumper 0402
9723	4822 117 13605	Jumper 0402
9724	4822 117 13605	Jumper 0402
9725	4822 051 30008	Jumper 0603
9727	4822 051 30008	Jumper 0603
9728	4822 051 30008	Jumper 0603
9731	4822 051 30008	Jumper 0603
9733	4822 051 30008	Jumper 0603
9735	4822 051 30008	Jumper 0603
9736	4822 051 30008	Jumper 0603
9737	4822 051 30008	Jumper 0603
9738	4822 051 30008	Jumper 0603
9739	4822 051 30008	Jumper 0603
9751	4822 117 13605	Jumper 0402
9752	4822 117 13605	Jumper 0402
9753	4822 117 13605	Jumper 0402
9754	4822 117 13605	Jumper 0402
9755	4822 117 13605	Jumper 0402
9756	4822 117 13605	Jumper 0402
9757	4822 117 13605	Jumper 0402
9758	4822 117 13605	Jumper 0402
9759	4822 117 13605	Jumper 0402
9760	4822 117 13605	Jumper 0402
9761	4822 117 13605	Jumper 0402
9762	4822 117 13605	Jumper 0402
9763	4822 117 13605	Jumper 0402
9765	4822 117 13605	Jumper 0402
9766	4822 117 13605	Jumper 0402
9773	4822 117 13605	Jumper 0402
9774	4822 117 13605	Jumper 0402
9775	4822 117 13605	Jumper 0402
9800	4822 117 13605	Jumper 0402
9801	4822 117 13605	Jumper 0402
9802	4822 117 13605	Jumper 0402
9803	4822 117 13605	Jumper 0402
9804	4822 117 13605	Jumper 0402
9805	4822 117 13605	Jumper 0402
9806	4822 117 13605	Jumper 0402
9808	4822 051 30008	Jumper 0603
9809	4822 051 30008	Jumper 0603
9811	4822 117 13605	Jumper 0402
9812	4822 117 13605	Jumper 0402
9815	4822 051 30008	Jumper 0603
9816	4822 051 30008	Jumper 0603
9817	4822 051 30008	Jumper 0603
9818	4822 051 30008	Jumper 0603
9901	4822 051 30008	Jumper 0603
9902	4822 051 30008	Jumper 0603
9903	4822 051 30008	Jumper 0603
9904	4822 051 30008	Jumper 0603
9905	4822 051 30008	Jumper 0603
9906	4822 051 30008	Jumper 0603
9907	4822 051 30008	Jumper 0603
9908	4822 051 30008	Jumper 0603
9909	4822 051 30008	Jumper 0603
9919	4822 051 30008	Jumper 0603
9920	4822 051 30008	Jumper 0603
9921	4822 051 30008	Jumper 0603
9925	4822 051 30008	Jumper 0603
9927	4822 051 30008	Jumper 0603
9928	4822 051 30008	Jumper 0603
9929	4822 051 30008	Jumper 0603
9935	4822 051 30008	Jumper 0603
9937	4822 051 30008	Jumper 0603
9938	4822 051 30008	Jumper 0603
9939	4822 051 30008	Jumper 0603
9941	4822 051 30759	75Ω 5% 0.062W
9942	4822 051 30759	75Ω 5% 0.062W
9944	4822 051 30008	Jumper 0603
9945	4822 051 30008	Jumper 0603
9946	4822 051 30008	Jumper 0603
9947	4822 051 30008	Jumper 0603
9948	4822 051 30008	Jumper 0603
9949	4822 051 30008	Jumper 0603
9950	4822 051 30008	Jumper 0603
9951	4822 051 30008	Jumper 0603
9952	4822 051 30008	Jumper 0603
9953	4822 051 30008	Jumper 0603
9954	4822 051 30008	Jumper 0603

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5301	4822 157 11876	6.8µH 10% 0805
5302	4822 157 11876	6.8µH 10% 0805
5401	3198 018 56880	6.8µH 10% 0603
5403	2422 549 44461	Trimmer 40MHz 5CCE
5404	2422 535 95427	Bead 120Ω at 100MHz
5405	2422 535 95427	Bead 120Ω at 100MHz
5406	4822 157 10586	2.2µH 10% 0805
5408	2422 549 44983	Trimmer 78MHz 5CCB
5409	2422 549 42896	Bead 120Ω 100MHz
5411	3198 018 32770	0.27µH 10% 0805
5415	4822 157 11716	Bead 30Ω at 100MHz
5416	4822 157 11716	Bead 30Ω at 100MHz
5651	2422 549 43769	Bead 30Ω 100MHz
5652	2422 549 43769	Bead 30Ω 100MHz
5653	2422 549 43769	Bead 30Ω 100MHz
5654	4822 157 11716	Bead 30Ω at 100MHz
5655	4822 157 11828	22µH 20% 0805
5656	4822 157 11876	6.8µH 10% 0805
5663	4822 051 30008	Jumper 0603
5671	4822 157 11716	Bead 30Ω at 100MHz
5672	4822 157 11716	Bead 30Ω at 100MHz
5700	4822 157 10586	2.2µH 10% 0805
5701	3198 018 31580	1.5µH 10% 0805
5702	4822 157 71304	1µH
5703	4822 157 11506	Bead 120Ω100MHz
5705	4822 157 11876	6.8µH 10% 0805
5710	4822 157 11716	Bead 30Ω at 100MHz
5711	4822 157 11716	Bead 30Ω at 100MHz
5712	4822 157 11716	Bead 30Ω at 100MHz
5713	4822 157 11716	Bead 30Ω at 100MHz
5714	4822 157 11716	Bead 30Ω at 100MHz
5715	4822 157 10586	2.2µH 10% 0805
5716	4822 157 10586	2.2µH 10% 0805
5717	4822 157 10586	2.2µH 10% 0805
5718	4822 157 11716	Bead 30Ω at 100MHz
5720	4822 157 11716	Bead 30Ω at 100MHz
5722	4822 157 11716	Bead 30Ω at 100MHz
5750	4822 157 11716	Bead 30Ω at 100MHz
5751	4822 157 11716	Bead 30Ω at 100MHz
5752	4822 157 11716	Bead 30Ω at 100MHz
5753	4822 157 11716	Bead 30Ω at 100MHz

754	4822 157 11716	Bead 30Ω at 100MHz
755	4822 157 11716	Bead 30Ω at 100MHz
756	4822 157 11716	Bead 30Ω at 100MHz
757	4822 157 11716	Bead 30Ω at 100MHz
758	4822 157 11716	Bead 30Ω at 100MHz
759	4822 157 11716	Bead 30Ω at 100MHz
760	4822 157 11716	Bead 30Ω at 100MHz
761	4822 157 11716	Bead 30Ω at 100MHz
762	4822 157 11716	Bead 30Ω at 100MHz
763	4822 157 11716	Bead 30Ω at 100MHz
764	4822 157 11716	Bead 30Ω at 100MHz
765	4822 157 11716	Bead 30Ω at 100MHz
767	4822 157 11716	Bead 30Ω at 100MHz
768	4822 157 11716	Bead 30Ω at 100MHz
769	4822 157 11716	Bead 30Ω at 100MHz
770	4822 157 11716	Bead 30Ω at 100MHz
771	4822 157 11716	Bead 30Ω at 100MHz
772	4822 157 11716	Bead 30Ω at 100MHz
775	4822 157 11716	Bead 30Ω at 100MHz
800	4822 157 11506	Bead 120Ω100MHz
900	4822 157 11716	Bead 30Ω at 100MHz
901	4822 157 11716	Bead 30Ω at 100MHz
902	4822 157 11716	Bead 30Ω at 100MHz
903	4822 157 11716	Bead 30Ω at 100MHz
904	4822 157 11716	Bead 30Ω at 100MHz
910	2422 549 43062	Bead 600Ω at 100MHz
911	2422 549 43062	Bead 600Ω at 100MHz
912	2422 549 43062	Bead 600Ω at 100MHz
913	2422 549 43062	Bead 600Ω at 100MHz
914	2422 549 43062	Bead 600Ω at 100MHz
915	2422 549 43062	Bead 600Ω at 100MHz
917	2422 549 43062	Bead 600Ω at 100MHz
918	2422 549 43062	Bead 600Ω at 100MHz
919	2422 549 43062	Bead 600Ω at 100MHz
920	2422 549 43062	Bead 600Ω at 100MHz

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001	4822 130 80622	BAT54
002	4822 130 11397	BAS316
003	4822 130 80622	BAT54
004	4822 130 80622	BAT54
005	4822 130 11422	PLVA2650A
303	9322 150 18685	BZX384-C47
304	4822 130 11397	BAS316
306	3198 020 55680	BZX384-C5V6
307	4822 130 80622	BAT54
309	4822 130 11397	BAS316
310	4822 130 11416	PDZ6.8B
311	9340 548 67115	PDZ22B
312	4822 130 11397	BAS316
313	9340 548 67115	PDZ22B
314	4822 130 11397	BAS316
317	4822 130 11397	BAS316
319	4822 130 11397	BAS316
334	4822 130 11397	BAS316
403	9340 552 30115	BA591
652	4822 130 11551	UDZS10B
657	4822 130 10838	UDZ3.3B
658	4822 130 11397	BAS316
719	9322 128 69685	S1D
730	9322 128 69685	S1D
731	9322 128 69685	S1D
926	4822 130 11397	BAS316
927	4822 130 11397	BAS316
928	4822 130 11397	BAS316
929	4822 130 11397	BAS316
956	4822 130 11397	BAS316
957	4822 130 11397	BAS316

001	9352 684 81557	SAA5801H/015
002	3198 010 42320	BC857BW
003	3198 010 42310	BC847BW
004	3198 010 42310	BC847BW
005	9322 116 74668	LD1117D33
007	9322 200 55668	IS41LV16100-50K
008	3198 010 42310	BC847BW
009	3198 010 42310	BC847BW
010	3198 010 42320	BC857BW
011	9322 156 81668	M24C32-WMN6TNKSA
013	3198 010 42310	BC847BW
014	3198 010 42320	BC857BW
015	4822 209 73852	PMBT2369
016	4822 209 73852	PMBT2369
301	9352 681 65518	TDA9330N3
303	3198 010 42320	BC857BW
304	3198 010 42310	BC847BW
308	3198 010 42320	BC857BW
309	3198 010 42320	BC857BW
310	3198 010 42310	BC847BW
7311	3198 010 42320	BC857BW
7312	9340 310 30215	PDTC144ET
7318	3198 010 42320	BC857BW
7319	3198 010 42320	BC857BW
7320	3198 010 42310	BC847BW
7322	3198 010 42310	BC847BW
7323	9352 625 24518	TDA9321H/N2
7402	3198 010 42310	BC847BW
7403	5322 130 60159	BC846B
7404	3198 010 42310	BC847BW
7407	4822 130 60373	BC856B
7410	3198 010 42310	BC847BW
7411	5322 130 60159	BC846B
7651	9322 180 61702	MSP3411G-FH-B8-V3
7652	9351 869 40118	74HC4053PW
7664	9340 425 30115	BC847BPN
7665	9340 425 30115	BC847BPN
7668	3198 010 42320	BC857BW
7674	3198 010 42310	BC847BW
7675	9340 425 20115	BC847BS
7678	9340 425 20115	BC847BS
7679	9340 425 20115	BC847BS
7680	3198 010 42310	BC847BW
7681	9322 060 73668	MC33178DR2
7682	5322 130 60159	BC846B
7703	4822 209 73852	PMBT2369
7705	3198 010 42310	BC847BW
7706	3198 010 70400	74LVC1G14GW
7707	3198 010 42310	BC847BW
7708	3198 010 42310	BC847BW
7709	3198 010 42310	BC847BW
7710	3198 010 42310	BC847BW
7711	2422 486 80938	Socket 32p f
7712	9351 870 00118	74HC573PW
7713	9352 688 09557	SAA4978H/V204
7714	9965 000 02179	MS81V04160-25TB
7715	4822 209 73852	PMBT2369
7717	4822 209 73852	PMBT2369
7719	9322 206 19672	MSM56V16160F-7T3-FG
7720	9322 207 36702	T6TX5EF-0001
7725	4822 209 73852	PMBT2369
7728	5322 130 42718	BFS20
7729	5322 130 42718	BFS20
7730	5322 130 42718	BFS20
7731	5322 130 42718	BFS20
7732	5322 130 42718	BFS20
7733	5322 130 42718	BFS20
7752	9322 202 21671	T6TU5XB-0001
7753▲	9322 206 19672	MSM56V16160F-7T3-FG
7760▲	9352 730 86557	SAA4998H/V1
7770	4822 209 17398	LD1117DT33
7772	9322 170 14668	LF15ABDT
7773	9322 179 78668	LF18ABDT
7774	9322 142 88668	LF25CDT

Side I/O Panel [D]

Various

0205	3104 304 24881	Side I/O bracket
1326	4822 267 10975	Connector 3p
1327	4822 267 31014	Socket headphone
1328	2422 026 05133	Connector SVHS 4p f
1936▲	2422 025 12485	Connector 11p m
1980	4822 267 10565	Connector 4p
1981	4822 267 10735	Connector 3p
8936▲	3104 311 05271	Cable 11p/820/11p
8981	3104 301 07761	Cable 3p/680/3p

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2803	5322 126 10733	680pF 5% 50V
2804	5322 122 32531	100pF 5% 50V
2805	5322 122 32531	100pF 5% 50V
2806	5322 126 10733	680pF 5% 50V
2807	4822 126 14076	220nF +80/-20% 25V
2813	4822 124 22652	2.2µF 20% 50V
2832	5322 122 31863	330pF 5% 63V 0805
2834	5322 122 31863	330pF 5% 63V 0805
2840	4822 122 33177	10nF 20% 50V
2841	4822 122 33177	10nF 20% 50V

-WW-

3803	4822 050 11002	1kΩ 1% 0.4W
3804	4822 050 11002	1kΩ 1% 0.4W
3814	4822 117 10833	10kΩ 1% 0.1W
3816	4822 051 20008	Jumper 0805
3826	4822 116 52199	68Ω 5% 0.5W
3827	4822 116 52199	68Ω 5% 0.5W
3828	4822 116 52199	68Ω 5% 0.5W
3829	4822 116 52199	68Ω 5% 0.5W
3830	4822 050 21003	10kΩ 1% 0.6W
3835	4822 116 52175	100Ω 5% 0.5W
3842	4822 050 21003	10kΩ 1% 0.6W
9801	4822 051 20008	Jumper 0805
9803	4822 051 20008	Jumper 0805
9804	4822 051 20008	Jumper 0805
9805	4822 051 20008	Jumper 0805
9806	4822 051 20008	Jumper 0805
9809	4822 051 20008	Jumper 0805

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6801	4822 130 11416	PDZ6.8B
6802	4822 130 11416	PDZ6.8B
6803	4822 130 11551	UDZS10B
6804	4822 130 11551	UDZS10B
6805	4822 130 11551	UDZS10B
6806	4822 130 11551	UDZS10B
6807	4822 130 11416	PDZ6.8B
6808	4822 130 11416	PDZ6.8B

Top Control Panel [E]

Various

0345	4822 267 10567	Connector 4p
1701	4822 276 13775	Switch
1702	4822 276 13775	Switch
1703	4822 276 13775	Switch
1704	4822 276 13775	Switch
1705	4822 276 13775	Switch
8346	3104 311 06391	Cable 4p/1000/4p h Wh

-WW-

3008	4822 117 10845	620Ω 1% 0.1W
3010	4822 117 11534	1.1kΩ 1% 0.1W
3013	4822 117 13528	200Ω 1% 0.125W 0805
3101	4822 117 11951	2kΩ 1% 0.1W
3104	4822 051 20391	390Ω 5% 0.1W
3999	4822 117 10833	10kΩ 1% 0.1W

CRT Panel

Various

0032	4822 492 70788	Fix IC
0034	4822 492 70788	Fix IC
0036	4822 492 70788	Fix IC
1298▲	2422 500 80063	Connector CRT 10p f
1424	2422 025 11244	Connector 7p m
1434	4822 267 10973	Connector 1p
1483	2422 025 16382	Connector 3p m
1940▲	2422 025 12485	Connector 11p m
8483▲	3104 311 03111	Cable 3p/340/3p ferrite

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2312	4822 126 14585	100nF 10% 0805 50V
2313	4822 124 12373	47µF 20% 250V
2318	2238 916 15641	22nF 10% 25V 0603
2320	2020 558 90445	10nF 20% 1kV
2320	2252 648 08032	10nF 20% 500V
2324	4822 121 70594	1nF 5% 2kV
2324	5322 121 44356	4.7nF 5% 2kV
2338	2222 365 45104	100nF 10% 250V
2339	2222 365 45104	100nF 10% 250V
2340	2222 365 45104	100nF 10% 250V
2341	2238 586 59812	100nF 20% 50V 0603
2342	4822 126 14241	330pF 0603 50V
2347	4822 124 80791	470µF 20% 16V
2348	5322 126 11583	10nF 10% 50V 0603
2358	4822 124 80791	470µF 20% 16V
2359	5322 126 11583	10nF 10% 50V 0603
2403	4822 124 41584	100µF 20% 10V
2404	4822 124 41584	100µF 20% 10V
2405	4822 122 31177	470pF 10% 500V
2410	2238 916 15641	22nF 10% 25V 0603
2411	2238 916 15641	22nF 10% 25V 0603
2420	2222 930 56627	2.2nF 10% 200V 0805
2428	3198 017 42230	22nF 50V 0603
2435	2020 557 90734	22nF 10% 250V
2436	2020 012 93596	22µF 20% 250V
2437	5322 126 11578	1nF 10% 50V 0603
2438	2222 930 56627	2.2nF 10% 200V 0805
2439	2020 557 90734	22nF 10% 250V
2501	2238 586 59812	100nF 20% 50V 0603
2503	2238 586 59812	100nF 20% 50V 0603

2505	2238 586 59812	100nF 20% 50V 0603
2510	4822 126 14585	100nF 10% 0805 50V
2511	4822 126 14585	100nF 10% 0805 50V

-WW-

3301	4822 117 12517	5.6kΩ 5% 5W
3304▲	4822 052 10102	1kΩ 5% 0.33W
3305▲	4822 052 10108	1Ω 5% 0.33W
3310	4822 051 10102	1kΩ 2% 0.25W
3334	4822 050 11002	1kΩ 1% 0.4W
3338	3198 013 04710	470Ω 20% 0.5W
3339	3198 013 04710	470Ω 20% 0.5W
3340	3198 013 04710	470Ω 20% 0.5W
3341▲	4822 052 11479	47Ω 5% 0.5W
3345	4822 116 52191	33Ω 5% 0.5W
3347	3198 013 01520	1.5kΩ 20% 0.5W
3348▲	4822 117 13016	VDR 1mA/50V
3349	3198 013 01020	1kΩ 20% 0.5W
3350	4822 116 52175	100Ω 5% 0.5W
3351	4822 116 52175	100Ω 5% 0.5W
3352	4822 116 52175	100Ω 5% 0.5W
3356	4822 051 10102	1kΩ 2% 0.25W
3401	4822 053 11101	100Ω 5% 2W
3402	4822 116 52176	10Ω 5% 0.5W
3403▲	4822 052 10108	1Ω 5% 0.33W
3403▲	4822 052 11108	1Ω 5% 0.5W
3404▲	4822 052 10108	1Ω 5% 0.33W
3410	4822 051 30471	47Ω 5% 0.062W
3411	4822 117 11148	56kΩ 1% 0.1W
3412	4822 117 11148	56kΩ 1% 0.1W
3413	4822 051 30471	47Ω 5% 0.062W
3416	4822 051 20333	33kΩ 5% 0.1W
3417	4822 051 20333	33kΩ 5% 0.1W
3422	4822 051 30008	Jumper 0603
3448	4822 051 20333	33kΩ 5% 0.1W
3449	4822 117 11817	1.2kΩ 1% 0.0625W
3451	4822 051 30102	1kΩ 5% 0.062W
3453	4822 051 30103	10kΩ 5% 0.062W
3454	4822 051 20333	33kΩ 5% 0.1W
3456	4822 051 30332	3.3Ω 5% 0.062W
3458	4822 117 12139	22Ω 5% 0.062W
3459	4822 051 30101	100Ω 5% 0.062W
3460	4822 117 12139	22Ω 5% 0.062W
3465	4822 051 30008	Jumper 0603
3471	4822 117 11817	1.2kΩ 1% 0.0625W
3473	4822 116 80176	1Ω 5% 0.5W
3474	4822 051 30103	10kΩ 5% 0.062W
3478	4822 116 80176	1Ω 5% 0.5W
3488	4822 051 30008	Jumper 0603
3489	4822 051 30109	10Ω 5% 0.062W
3492	4822 051 30008	Jumper 0603
3501	4822 117 10361	680Ω 1% 0.1W
3502	4822 051 30331	330Ω 5% 0.062W
3506	4822 051 30471	47Ω 5% 0.062W
3507	4822 051 30008	Jumper 0603
3510	4822 116 52175	100Ω 5% 0.5W
3510	4822 116 52228	680Ω 5% 0.5W
3511	4822 117 10361	680Ω 1% 0.1W
3512	4822 051 30331	330Ω 5% 0.062W
3516	4822 117 13632	100kΩ 1% 0603 0.62W
3517	4822 051 30102	1kΩ 5% 0.062W
3518	4822 051 30008	Jumper 0603
3520	4822 116 52219	330Ω 5% 0.5W
3520	4822 116 52228	680Ω 5% 0.5W
3521	4822 117 10361	680Ω 1% 0.1W
3522	4822 051 30331	330Ω 5% 0.062W
3526	4822 051 30471	47Ω 5% 0.062W
3527	4822 051 30008	Jumper 0603
3530	4822 116 52219	330Ω 5% 0.5W
3530	4822 116 52228	680Ω 5% 0.5W
3532	4822 051 30471	47Ω 5% 0.062W
3533	4822 051 30008	Jumper 0603
3535	4822 051 20008	Jumper 0805
3536	4822 051 20008	Jumper 0805
3537	4822 051 20008	Jumper 0805
3539	4822 051 20561	560Ω 5% 0.1W
3541	4822 051 20561	560Ω 5% 0.1W
3543	4822 051 20561	560Ω 5% 0.1W
3544	4822 116 52285	470kΩ 5% 0.5W
3545	4822 051 30109	10Ω 5% 0.062W
3546	4822 051 30109	10Ω 5% 0.062W
3547	4822 051 30109	10Ω 5% 0.062W
3999	4822 051 30332	3.3Ω 5% 0.062W
3999	4822 117 11817	1.2kΩ 1% 0.0625W
9301	4822 051 30008	Jumper 0603
9303	4822 051 30008	Jumper 0603
9305	4822 051 30008	Jumper 0603
9306	4822 051 30008	Jumper 0603
9307	4822 051 30008	Jumper 0603
9308	4822 051 30008	Jumper 0603
9314	4822 051 30008	Jumper 0603
9323	4822 051 30008	Jumper 0603
9324	4822 051 30008	Jumper 0603
9325	4822 051 30008	Jumper 0603
9401	4822 051 20008	Jumper 0805
9402	4822 051 30008	Jumper 0603
9403	4822 051 30008	Jumper 0603
9406	4822 051 20008	Jumper 0805
9408	4822 051 30008	Jumper 0603
9409	4822 051 30008	Jumper 0603
9428	4822 051 30008	Jumper 0603
9432	4822 051 30008	Jumper 0603
9437	4822 051 30008	Jumper 0603
9450	4822 051 20008	Jumper 0805
9452	4822 051 20008	Jumper 0805
9453	4822 051 20008	Jumper 0805

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5300▲	3104 308 20571	Transf. S13974-03
5304	4822 526 10704	Bead 100MHz
5305	2422 549 42896	Bead 120Ω 100MHz
5308	4822 157 11867	5.6μH 5%
5309	4822 157 11867	5.6μH 5%
5310	4822 157 50964	100μH
5400	4822 157 11869	33μH 10%
5400	4822 157 71467	39μH 10%
5500	2722 122 00337	Del line 70ns SDL-5135
5501	2722 122 00337	Del line 70ns SDL-5135
5502	2722 122 00337	Del line 70ns SDL-5135

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6301	9340 553 52115	BAS321
6302	9340 553 52115	BAS321
6303	9340 553 52115	BAS321
6305	9340 553 52115	BAS321
6306	9340 553 52115	BAS321
6307	9340 553 52115	BAS321
6401	4822 130 11397	BAS316
6402	4822 130 11397	BAS316
6403	4822 130 11397	BAS316
6404	4822 130 11397	BAS316
6405	3139 120 52021	BYV29X-500
6407	4822 130 11397	BAS316
6420	5322 130 34337	BAV99
6421	5322 130 34337	BAV99
6422	5322 130 34337	BAV99
6426	4822 130 30613	BAW62
6427	4822 130 30613	BAW62
6428	4822 130 30613	BAW62
6430	9340 548 61115	PDZ12B
6431	4822 130 11397	BAS316
6432	9340 553 52115	BAS321
6500	4822 130 11397	BAS316
6501	4822 130 11397	BAS316
6502	4822 130 11397	BAS316
6503	4822 130 41601	BYV95A

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7330	9352 694 46112	TDA6118JF/N1
7340	9352 694 46112	TDA6118JF/N1
7350	9352 694 46112	TDA6118JF/N1
7414	5322 130 62804	BCP53
7415	5322 130 63033	BCP56
7422	5322 130 42718	BFS20
7427	5322 130 60159	BC846B
7428	4822 130 60373	BC856B
7429	5322 130 63033	BCP56
7430	5322 130 62804	BCP53
7500	5322 130 42718	BFS20
7501	5322 130 60159	BC846B
7503	5322 130 42718	BFS20
7504	5322 130 60159	BC846B
7506	5322 130 42718	BFS20
7507	5322 130 60159	BC846B

DC Shift Panel [G]

Various

0317	4822 265 20723	Connector 2p
0318	4822 265 20723	Connector 2p
1430	2422 086 10581	Fuse 400mA 65V
8317	3104 311 01421	Cable 2p3/220/2p3 Wh

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2430	4822 122 31177	470pF 10% 500V
2431	4822 122 31177	470pF 10% 500V

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5430	3128 138 38911	DC-shift coil CU15

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6432	9340 317 00133	BYD33V
6433	9340 317 00133	BYD33V

3rd SCART Panel [H]

Various

0043	3104 304 21311	Coverplate SCART
1402	4822 267 10596	Connector 5p
1680	4822 265 31067	Connector 7p m
1992	2422 025 16725	Connector SCART f m Bk

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2500	2020 552 95344	680nF 20-80% 16V 0805
2504	2020 552 94427	100pF 5% 50V
2508	2020 552 95344	680nF 20-80% 16V 0805
2509	2020 552 94427	100pF 5% 50V

-WW-

3501	4822 051 30102	1kΩ 5% 0.062W
3502	4822 051 30008	Jumper 0603
3507	4822 051 30102	1kΩ 5% 0.062W
3508	4822 051 30008	Jumper 0603
3512	4822 051 30008	Jumper 0603
3526	4822 051 30101	100Ω 5% 0.062W
3538	4822 051 30008	Jumper 0603
3540	4822 051 30008	Jumper 0603
3542	4822 051 30008	Jumper 0603
3544	4822 051 30008	Jumper 0603
3999	4822 051 30392	3.9Ω 5% 0.063W 0603
9514	4822 051 30008	Jumper 0603
9515	4822 051 30008	Jumper 0603
9523	4822 051 30008	Jumper 0603
9525	4822 051 30008	Jumper 0603
9528	4822 051 30008	Jumper 0603
9529	4822 051 30008	Jumper 0603
9541	4822 051 30008	Jumper 0603
9542	4822 051 30008	Jumper 0603

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6500	4822 130 11416	PDZ6.8B
6501	4822 130 11416	PDZ6.8B
6502	4822 130 11416	PDZ6.8B
6503	4822 130 11416	PDZ6.8B
6506	4822 130 11416	PDZ6.8B
6507	9340 548 61115	PDZ12B
6509	4822 130 11416	PDZ6.8B
6510	4822 130 11416	PDZ6.8B
6511	4822 130 11416	PDZ6.8B
6512	4822 130 11416	PDZ6.8B

DAF Panel [I]

Various

1417	4822 265 20723	Connector 2p
1418	2422 025 16374	Connector 2p m
1419	4822 265 20723	Connector 2p
1491▲	3104 311 02452	Cable f-hook/340/1p
1497	4822 267 10973	Connector 1p
8418▲	3104 311 01951	Cable 2p3/560/2p4 Bk

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2800	2222 375 90498	470pF 5% 2kV
2821	2222 479 90166	68pF 5% 400V
2890	2222 375 90276	220pF 5% 2kV

-WW-

3998	4822 116 83876	270Ω 5% 0.5W

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5800▲	4822 148 81242	Coil CU20C2
5801	3128 138 38881	Transformer CU15 B

lains Switch Panel [J]

arious

046	3104 304 23471	Bracket mains unit FL11
049	3104 308 11041	Mains knob assy
151	4822 256 91766	LED holder
160	4822 256 91766	LED holder
170	4822 256 10562	Photo diode holder
201▲	2422 025 16268	Connector 2p m
202▲	2422 025 16268	Connector 2p m
241	2422 025 06354	Connector 9p m
040	9322 185 95667	IR receiver TSOP4836
051▲	2422 128 02924	Switch power 2p
202	3104 311 02571	Cable 2p3/680/2p3 Bk
946▲	3104 311 04981	Cable 9p/820/9p

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040	4822 124 41584	100µF 20% 10V
060	4822 124 81151	22µF 50V
070	3198 017 44740	470nF 10V 0603
071	4822 124 40248	10µF 20% 63V

-WW-

040	4822 117 13577	330Ω 1% 1.25W 0805
041	4822 051 30103	10kΩ 5% 0.062W
042	4822 051 30682	6.8Ω 5% 0.062W
043	4822 051 30471	47Ω 5% 0.062W
052	4822 051 30331	330Ω 5% 0.062W
057▲	4822 053 21335	3.3MΩ 5% 0.5W
060	4822 051 30103	10kΩ 5% 0.062W
061	4822 117 13577	330Ω 1% 1.25W 0805
062	4822 117 11373	100Ω 1% 0805
063	4822 051 30103	10kΩ 5% 0.062W
064	4822 117 11373	100Ω 1% 0805
066▲	4822 053 21335	3.3MΩ 5% 0.5W
070	4822 051 30155	1.5MΩ 5% 0.062W
071	4822 051 30155	1.5MΩ 5% 0.062W
072	4822 051 30102	1kΩ 5% 0.062W
073	4822 051 30332	3.3Ω 5% 0.062W
074	4822 051 30103	10kΩ 5% 0.062W
075	4822 051 30472	4.7Ω 5% 0.062W
078	4822 051 30332	3.3Ω 5% 0.062W
999	4822 051 30472	4.7Ω 5% 0.062W
008	4822 051 30008	Jumper 0603
010	4822 051 30008	Jumper 0603
040	4822 051 30008	Jumper 0603
043	4822 051 30008	Jumper 0603
050	4822 051 30008	Jumper 0603
051	4822 051 30008	Jumper 0603
052	4822 051 30008	Jumper 0603
067	4822 051 30008	Jumper 0603

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050	9322 110 34682	LED TLDR5400
060	9322 191 72682	VS LTL353UBJ
061	4822 130 11397	BAS316
070	4822 130 11595	BPW46

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060	5322 130 60159	BC846B
061	5322 130 60159	BC846B
070	5322 209 82941	LM358D

utoscavem Panel [SC]

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440	2422 025 12485	Connector 11p m
940	2422 025 12485	Connector 11p m
955	4822 267 10735	Connector 3p
440	3104 311 05882	Cable 11p/400/11p

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000	4822 126 14223	2.2pF 10% 50V 0603
002	4822 126 13887	4.7pF 50V
003	4822 126 13887	4.7pF 50V
004	3198 016 31080	1pF 25% 50V 0603
006	2238 586 59812	100nF 20% 50V 0603
008	2238 916 15641	22nF 10% 25V 0603
010	2238 586 59812	100nF 20% 50V 0603
012	2238 916 15641	22nF 10% 25V 0603
2014	2238 916 15641	22nF 10% 25V 0603
2016	4822 122 33741	10pF 10% 50V
2020	2238 916 15641	22nF 10% 25V 0603
2038	2238 916 15641	22nF 10% 25V 0603
2040	4822 126 14225	56pF 5% 50V 0603
2041	3198 016 35680	5.6pF 0.5pF 50V 0603
2208	4822 124 41584	100µF 20% 10V
2600	4822 124 80791	470µF 20% 16V
2602	5322 122 32654	22nF 10% 63V 0805
2605	3198 017 41050	1µF 10V 0603
2607	5322 122 32654	22nF 10% 63V 0805

-WW-

3000	4822 051 30101	100Ω 5% 0.062W
3002	4822 051 30101	100Ω 5% 0.062W
3004	4822 051 30101	100Ω 5% 0.062W
3006	4822 051 30102	1kΩ 5% 0.062W
3008	4822 051 30102	1kΩ 5% 0.062W
3010	4822 051 30102	1kΩ 5% 0.062W
3012	4822 051 30332	3.3Ω 5% 0.062W
3014	4822 117 12903	1.8kΩ 1% 0.063W 0603
3016	4822 117 12902	8.2kΩ 1% 0.063W 0603
3018	4822 051 30681	680Ω 5% 0.062W
3020	4822 051 30471	47Ω 5% 0.062W
3022	4822 051 30393	39kΩ 5% 0.062W
3024	4822 051 30273	27kΩ 5% 0.062W
3028	4822 051 30223	22kΩ 5% 0.062W
3030	4822 051 30683	68kΩ 5% 0.062W
3032	4822 117 12903	1.8kΩ 1% 0.063W 0603
3034	4822 051 30222	2.2kΩ 5% 0.062W
3036	4822 051 30332	3.3Ω 5% 0.062W
3038	4822 051 30561	560Ω 5% 0.062W
3040	4822 117 12925	47kΩ 1% 0.063W 0603
3042	4822 051 30682	6.8Ω 5% 0.062W
3044	4822 051 30102	1kΩ 5% 0.062W
3046	4822 051 30102	1kΩ 5% 0.062W
3048	4822 051 30102	1kΩ 5% 0.062W
3050	4822 051 30561	560Ω 5% 0.062W
3052	4822 051 30561	560Ω 5% 0.062W
3054	4822 051 30102	1kΩ 5% 0.062W
3056	4822 051 30102	1kΩ 5% 0.062W
3058	4822 051 30471	47Ω 5% 0.062W
3060	4822 051 30471	47Ω 5% 0.062W
3062	4822 051 30222	2.2kΩ 5% 0.062W
3064	4822 117 12971	15Ω 5% 0603 0.62W
3066	4822 117 12902	8.2kΩ 1% 0.063W 0603
3068	4822 051 30681	680Ω 5% 0.062W
3070	4822 117 12902	8.2kΩ 1% 0.063W 0603
3072	4822 051 30152	1.5Ω 5% 0.062W
3074	4822 051 30101	100Ω 5% 0.062W
3076	4822 117 11817	1.2kΩ 1% 0.0625W
3078	4822 051 30102	1kΩ 5% 0.062W
3093	4822 051 30152	1.5Ω 5% 0.062W
3106	4822 051 30472	4.7Ω 5% 0.062W
3108	4822 051 30273	27kΩ 5% 0.062W
3110	4822 051 30392	3.9Ω 5% 0.063W 0603
3112	4822 051 30222	2.2kΩ 5% 0.062W
3114	4822 051 30101	100Ω 5% 0.062W
3116	4822 051 30102	1kΩ 5% 0.062W
3118	4822 051 30103	10kΩ 5% 0.062W
3120	4822 051 30103	10kΩ 5% 0.062W
3500	4822 051 30101	100Ω 5% 0.062W
3502	4822 051 30101	100Ω 5% 0.062W
3600▲	4822 117 13574	1.5Ω 5% 1206
3999	4822 117 12903	1.8kΩ 1% 0.063W 0603
9000	4822 051 30008	Jumper 0603
9002	4822 051 30008	Jumper 0603
9010	4822 051 30008	Jumper 0603
9020	4822 051 30008	Jumper 0603
9033	4822 116 52175	100Ω 5% 0.5W
9045	4822 051 30008	Jumper 0603
9046	4822 051 30008	Jumper 0603
9047	4822 051 30008	Jumper 0603

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5600	4822 157 11867	5.6µH 5%
5601	4822 157 11867	5.6µH 5%

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6000	5322 130 80119	BBY40

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7000	4822 130 60373	BC856B
7002	4822 130 60373	BC856B
7004	4822 130 60373	BC856B
7006	5322 130 42718	BFS20
7008	4822 130 60373	BC856B
7010	5322 130 42718	BFS20
7012	5322 130 42718	BFS20
7014	4822 130 60383	BF824
7016	5322 130 42718	BFS20
7018	5322 130 42718	BFS20
7020	4822 130 60383	BF824
7022	5322 130 42718	BFS20
7024	5322 130 42718	BFS20
7026	5322 130 42718	BFS20
7040	5322 130 42718	BFS20
7042	4822 130 60383	BF824
7500	5322 209 90559	TDA8444T/N4

11. Revision List

First release